

# SHE IS WITH A STOMACH

Nutrition of pregnant women and well-being of  
children in rural Karnataka

-Inge Hutter



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# SHE IS WITH A STOMACH

Toe-rings are worn, braid of jasmine garland  
Big belly is seen, over the waist band!  
Ain't you pregnant, angel-Laxmi  
Ain't you pregnant, Laxmi-angel  
What'en desire, you pregnant dear?

(Nuduva kalungra, mudiva mallige hara  
Naduvina odyanadalli, odeta kanuttave hotte  
Basarenevva, Laxmadevi, basarenavva Laxmadevi  
Baikenavva, premadinda)

Part of the *soobhana*,  
sung at the ceremony performed during the first  
pregnancy, the *kubusa*

Translation: Arya



SHE IS WITH A STOMACH

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(Nutrition of pregnant women and well-being  
of children in rural South India)

Inge Hutter

1998

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(Nutrition of pregnant women and well-being of children in rural South India)

by Inge Hutter

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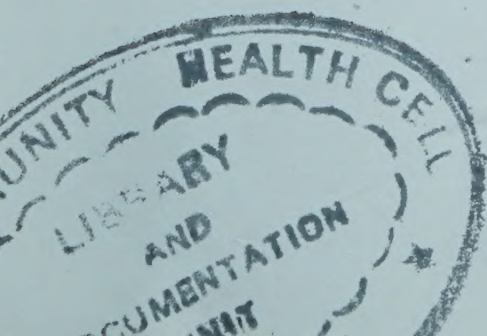
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# Preface

The contents of this book is based on PhD research which was conducted in eleven villages situated around Dharwad in Karnataka, India, and which included a fieldwork of 20 months in the period December 1990 to August 1992. The research resulted in the dissertation entitled “Being pregnant in rural South India; nutrition of women and well-being of children”, Thesis Publishers, Amsterdam (1994).

Results of scientific research should return to the people concerned, and therefore we decided to rework the dissertation into a popular English version (this book) which thereafter was translated in the local language spoken in Karnataka, Kannada. The dissertation has been summarized and popularized by mrs. Nandita Mudbidri. The translation in Kannada was done by mrs. Meera Bijapur and mrs. Pratibha Ritti. A further adaptation to Kannada and overall coordination was conducted by mr. Arya. All of them live in Dharwad. The project was funded by the Ministry of Foreign Affairs, The Hague, The Netherlands.

For the sake of readability, most references as they are mentioned in the dissertation, has been left out here. For readers with a deeper interest in the study, we request them kindly to refer to the dissertation itself.

## About the research project

In the course of a research project, one starts to contemplate on its history and the people who have played an important part in it. Actually, the research project described in this book commenced when I received -from an American organization- forms to participate in a competition of research proposals concerning the

health and nutrition of mother and child in developing countries. When my guide at the department of demography of the University of Groningen, the late dr. Bert van Norren, heard of my plans to participate, he suggested I write a proposal about a common custom in developing countries, i.e. the reduction of food intake during pregnancy.

That is how the project started .... in later stages several changes and adaptations took place.

Bert van Norren played an important role: not only during his courses in social demography, but also through personal talks he stimulated me to combine the two scientific disciplines demography and anthropology. Moreover, his enthusiasm for social demographic research has been an inspiration for me. I only wish he could have seen the final result of the project which started under his guidance.

At the start of the project, the late prof. dr. W.F. Buschkens at Leiden University kindly offered his cooperation. Together with prof. dr. J.D. Speckmann and drs. H.A.W. van Vianen, he constituted the group of people who guided me from the first moments onwards.

I would like to thank Harrie van Vianen for his support and encouragement throughout the research period. He was involved in all stages: writing the proposal, conducting the feasibility study in Dharwad area in October 1989, and reading and commenting on the several versions of the manuscript.

Prof. dr. J.D. Speckmann (University of Leiden), prof. dr. J.A. Kusin (Royal Tropical Institute: KIT) and prof. dr. E.R. Boersma (University of Groningen) constituted the supervisory committee. I am very grateful for the support and guidance they have provided throughout the research period. Moreover, I would



like to thank them for their encouragement and their confidence in this research project.

A few years ago, a research cooperation between the Department of Demography at the University of Groningen in The Netherlands and the nongovernmental organization (NGO) the India Development Service (IDS) at Dharwad in the state of Karnataka was established. Demography students, Henny de Vries and Wietze Lindeboom, analyzed data collected in the villages in which IDS conducts its activities. This research cooperation was reinforced in October 1989, when, with the help of this development organization, a feasibility study was conducted in Dharwad District. During the feasibility study also dr. P.H. Reddy from the Population Centre in Bangalore offered cooperation.

In the present project too, IDS has been very helpful: they introduced me in the research villages and helped me to find research assistants. I would like to thank Mrs. Shyamala Hiremath, dr. A.N. Kabur, R.B. Hiremath, the community organizers, the village health workers and all other people working with IDS. Their help has proven to be essential for the success of the fieldwork.

Moreover, I am grateful for the support given by the Karnatak University in Dharwad, Department of Anthropology. They kindly offered local guidance and library facilities. Prof. dr. Prabha V. Mahale acted as my local co-guide. Apart from assistance in the professional field, I enjoyed her friendship: I was always welcome in her house and in her family.

For the fieldwork, first of all I want to thank all the respondents who participated in the research project, especially the 186 pregnant women. I want to thank them for letting us measure, month after month, their weight, food intake, skinfold thickness etcetera, for answering so many of our curious questions and especially for letting us weigh the ones precious to them: their children.

Without the research assistants, this project could not have succeeded. I would very sincerely like to thank: Indraxi R. Kulkarni, Ningappa B. Khaironavar, Hema N. Khaironavar, Sunanda, Sudhakar S. Hosamani and Mrs. Hosamani, Shashikala B. Akki, Devendra F. Kotur and Gangavva Gh. Jiwaji. Apart from the work, they and their families shared part of their life with me. It is impossible to explain what they mean to me, but .... I will never forget the festival of Seegi Hunnime and Nagara Panchami which I celebrated in Veerapur with Gangavva and Devendra. Also, the wedding ceremonies of Devendra and his wife are unforgettable.

The trips on the red scooter together with Shashikala, waiting under the trees for the rains to stop and the talks and laughter we had are another sweet memory. I admire her courage to finish her bachelor course, in spite of all the constraints.

Indraxi (or Shalini as she is called by now) shared her family with me: the wooden figures, handmade by her father, which decorate our house in The Netherlands are only a material memento of their care.

During the census, it was Ningappa who wrote long stories on the census forms and who told me "if you really want to know Indian village life, you should take notice of this too". I am grateful for this and also for the discussions we had in his room about astrology, the *panchanga* and the medical system Ayurveda. When the nutritional survey started, the biggest surprise was that almost immediately one of the assistants joined the sample of pregnant women. Hema, Ningappa's wife turned out to be pregnant. I still remember our visits to the nursing home and especially the name giving of their daughter Pooja. And lastly, the in-depth interviews in which Sudhakar acted as interpreter were most pleasant.

When I mention in this book that 'we' conducted the research, I refer to the whole research team (see photograph)



which, besides the assistants, included the counterparts Anupama C. Angadi, Revathi S. Hosmath and H.K. Jayalakshmi. They collected the data on food intake, skinfold thickness and anaemia and estimated the nutritional values. I want to thank them for the huge amount of work they did. I especially thank Anupama who worked throughout the research period in a very sincere and competent way.

In addition, I want to thank the University of Agricultural Sciences, Home Science college, Department of Nutrition for their collaboration in providing the standard measures for the estimation of nutritional intake which they developed for this particular area of India.

I received private lessons in Kannada from Annapurna. I remember us sitting on the roof of her house, at seven o'clock in the morning. The smell of jasmine flowers put straight from her garden into my hair, is still fresh in my memory.

It would be too much to mention everybody in Dharwad and elsewhere in India who showed me their hospitality. Let me mention a few and gratefully acknowledge the others. I am grateful to dr. and Mrs. Tavargeri and the members of their joint family: not only for their hospitality but also for the health care provided when needed. Others I want to mention by name are: my neighbours Maggy, captain, Sarita and Rosshini Samuel, and Suma, Sudhakar and Ajay Bailey; Dhilshaad, Simi and her family, and Anand and Vandana.

Beyond doubt, Mr. Arya's friendship has been very important to me. I lived with him in the same house in Dharwad, and like no-one else he saw the pleasure but also the sweat and the tears which accompanied the fieldwork. When I came home from the villages, it was he who listened to my stories about buffaloes attacking the scooter, white ants attacking my research papers,

organizational problems to be faced, etcetera. Moreover, he shared his life and friends with me. Ever since the moment I received his first letter, in which he kindly offered the possibility to stay in his house, I had the heart-warming feeling that, somewhere in the middle of India, someone was waiting for me. Thanks, Arya, for giving me an Indian home.

I also want to thank Vasant Raichoor for everything he and his family, both in Dharwad and Paris, did for me. Our friendship made it easier to bridge the distance between India and Europe.

During my Ph.D. research, the Population Research Centre at the University of Groningen provided a very stimulating background and I want to thank my colleagues for this. Bart de Bruijn has been my closest colleague: working in the same room with him has been most enjoyable. And I want to thank Houkje de Boer for entering the census data in the computer.

I would like to thank my promoter, prof. dr. ir. Frans Willekens, for the funds he helped raise for this research and, moreover, for his encouragement and guidance. His three-day stay in Dharwad, the discussions we had about 'keeping distance', and the long train journey to Tirupathi are pleasant memories and will always remain in mind.

And, last but not least: I liked to make jokes about men writing their book and dedicating it to their wives and children ... and teased that I would dedicate mine, of course, to my husband. Well, dear Hans, here it is: without your help, support and above all love, crossing a distance of 160 kilometres (Enschede - Groningen) and 10,000 kilometres (Enschede - Dharwad), I would never have finished this book (as you know). Thank you ...





The research team

Under, from left to right : Hema N. Khaironavar, Gangavva Gh. Jiwaji, Shashikala B. Akki, Inge Hutter, Anupama C. Angadi, H.K. Jayalakshmi, and Indraxi R. Kulkarni

Above, from left to right : Devendra F. Kotur, Sudhakar S. Hosamani, and Ningappa B. Khaironavar

Missing in this photograph : Revathi S. Hosamath, Sunanda and Mrs. Hosamani





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# Chapter 1 Introduction

Recently, in May 1993, the World Health Assembly adopted a resolution on maternal and child health, and family planning for health, emphasizing the

“elimination of harmful traditional practices and other social and behavioral obstacles affecting the health of women, children and adolescents”.

It decries the persistence of practices

“such as child marriages, *dietary limitations* during pregnancy and female genital mutilation”

and states that

“such practices restrict the attainment of the goals of health, development and human rights for all members of society” (ESCAP, 1993).

This resolution, adopted by the World Health Assembly, comprises the main questions of this research project, which focuses on mother and child health in rural South India and dietary limitations during pregnancy.

## **Mother and child health in developing countries**

In developing countries infant and child mortality has declined considerably during the last forty years, but the rates are still unacceptably high. While under-five mortality in the developed world nowadays amounts to 17 deaths per 1,000 live births, in the least developed countries rates as high as 180 deaths per 1,000 live births have been reported. In South Asian countries like India rates are lower, but still amount to 126 deaths per 1,000 live births.

In India, infant mortality, i.e. deaths in the first year of life, numbers 74 deaths per 1,000 live births. Most of these occur in the first month of life, the neonatal period. The majority occur in the first week. Causes of death in this first month of life are related to pregnancy and delivery: two of the factors most commonly mentioned are prematurity and low birth weight.

While infant mortality in developing countries is around ten times as high as in industrialized countries, maternal deaths (deaths related to pregnancy and childbirth) are even one hundred times as high. In India, maternal mortality is commonly estimated to be 400-500 per 100,000 live births. However, due to underreporting an estimate of 800 per 100,000 live births seems to be more realistic. In rural areas, rates as high as 1,360 per 100,000 live births have been reported. Given a total fertility (TFR) of four to five and a maternal mortality ratio of 500 per 100,000 live births, the lifetime risk of dying from pregnancy and child birth related causes for an Indian woman is one in 27. The majority (75.0 per cent) of maternal deaths in India can be attributed to direct causes like haemorrhage, sepsis, abortion and toxæmia. Several studies indicate that more than 60 per cent of these maternal deaths are preventable. It is obvious that the mortality rates among mothers and children only partially reveal the extent of the total of health problems related to pregnancy and childbirth.

### **Dietary limitations during pregnancy**

On the subject of nutrition during pregnancy, many customs and practices with regard to the quality of food intake have been reported in literature. In India, the taboo on the consumption of papaya during pregnancy is well-known: it is avoided because its heating quality is supposed to induce an abortion. Similarly, eggs are reported to be avoided because the child would be born bald.



With regard to the quantity of food, a common custom in developing countries is to reduce food intake during pregnancy, especially in the last trimester. Among other countries, this custom has been reported in Kenya, Oman, Ethiopia, Sudan, Iran, Somalia and India. In the nineteenth century, European women also tended to lower their food intake during pregnancy. In general, the literature states that the reason behind this custom is that women hope to have a small child and thus an easy delivery.

Although the custom has been reported to exist in several developing countries, not much quantitative evidence of a reduction in food intake during the last trimester of pregnancy has been found. In the feasibility study conducted in the present research area, women too mentioned that they lowered food intake at the end of pregnancy, but we wonder whether they really did eat less. In other words, we wonder whether the reported reduction in food intake can be confirmed by quantitative data on food intake. Also, we wonder by how much intake is reduced during the last trimester of pregnancy and whether all women eat less during pregnancy.

A reduction in food intake contradicts international standards which recommend pregnant women to eat more than normal throughout pregnancy, i.e. an extra 285 kilocalories (kcal.) per day. This recommendation was formulated based on a theoretical total energy cost of pregnancy of 85,000 kcal. In this theoretical model, women gain on average 12.5 kilograms during pregnancy while the average birth weight of children is 3.4 kg.

In India, most women reach neither the recommended level of energy intake nor the theoretical average weight gain and birth weight. The daily food intake of pregnant and lactating Indian women has been estimated to be deficient by about 1,000 kcal. Average maternal weight gain amounts to six kg. only, and average birth weight to 2,700 grammes. The percentage of Low Birth

Weight (LBW: < 2,500 grammes) children is one of the highest in the world, amounting to 30 per cent of all live births.

Moreover, the nutritional status of most Indian women is poor even before pregnancy. This is not only due to poverty, but also to the status of women in Indian society. In general, girls receive less food than boys and women take their meals only after all other family members have finished theirs. In this research project we wonder what will happen if these women, whose nutritional status is already poor before conception, lower their food intake in the last trimester of pregnancy.

As mentioned above, the most commonly quoted reason for reducing food intake during the last trimester is that women hope to have a small child and thus an easy delivery.

In research in South India, some studies found that most women associate a reduction in food intake in the last trimester of pregnancy with a big rather than a small child: if they eat too much there would not be enough room for the child to grow. In the feasibility study conducted in the research area too, most women stated that if they ate less than normal during pregnancy the child would be big and healthy.

In this research project, we study more extensively the reasons behind the custom of eating less during the last three months of pregnancy, as perceived by women themselves.

## **Research questions**

Let us return to the resolution adopted by the World Health Assembly to which we referred in the beginning of this introduction. The World Health Assembly mentions the practice of dietary limitations, an issue related directly to the main question of the research:



*Can the reported reduction in food intake during the last trimester of pregnancy be confirmed by quantitative data on food intake?*

- *To what extent is food intake during the last trimester of pregnancy reduced?*
- *Do all women lower food intake during the last trimester of pregnancy or is the custom of reduction in food intake only practised by a particular group of women?*

The World Health Assembly states that dietary limitation during pregnancy is a harmful practice and needs to be eliminated. We explore whether a reduction in food intake during the last trimester of pregnancy is indeed harmful, and for who it might be harmful: for the mother, the child or for both? Moreover, we study whether it is more harmful among women who are already in a poor nutritional status before conception. Summarizing, the research project focuses on the following question:

*What are the effects of a reduction in food intake during the last trimester of pregnancy among women whose nutritional status is already poor before conception on the health condition of women and pregnancy outcome?*

However, a custom like the reduction in food intake during pregnancy can only be changed, if the reasons as perceived by the women themselves are known. In the second part of the research project, therefore, we focus on the question:

*What are the reasons behind the custom of reduction in food intake in the last trimester of pregnancy, as perceived by women themselves?*

To answer these research questions, a fieldwork project was set up and carried out in a rural area (eleven villages) in Dharwad taluk, Dharwad District in the state of Karnataka, India.

## Relevance of the research

Here, we try to give *a more holistic picture of the course of pregnancy* by measuring not only nutrition during pregnancy, maternal weight gain, and birth weight of children, but also other indicators of nutritional status of women, like prepregnancy weight-for-height status and development of skinfold thickness and mid-upper-arm circumference. Also, the use of antenatal services, compliance with iron tablets, tetanus injections and food supplementation, and prevalence of anaemia are discussed. Other variables included are physical activity during pregnancy and the reproductive history of the women (age, parity and birth interval).

Most research studies the effects of food intake during pregnancy on the birth weight of children. However, a study on birth weight alone as an indicator of well-being of the child is not satisfactory. Several studies have focused on weight gain in the first month of life and compared infants in industrialized societies with infants in developing countries. Although their average birth weight was lower, infants in developing countries appear to gain more weight (over 300 grammes more) and to catch up in weight after delivery. The difference was most obvious in the first days of life. In our research, we follow this research and measure *not only birth weight but also growth and development of children in the first month of life*.

Most studies of the relationship between nutrition during pregnancy, weight gain and birth weight are quantitative in character and do not pay attention to factors determining food intake during pregnancy. In our research, we include the latter topic as well. We also examine the possible factors ecological,



economic, physical, social, and cultural related to the custom of reduction in food intake during the last trimester of pregnancy.

The scientific relevance of this research project, therefore, is that it not only studies the effects of a reduction in food intake among women whose nutritional status is already poor before conception on the health condition of the mother and well-being of the child, but also the reasons behind such a reduction in food intake. It is an *interdisciplinary approach* of the topic as both medical, nutritional, demographic, and anthropological aspects are included. Only in this way can a better understanding and explanation of the custom of reduction in food intake during the last trimester of pregnancy be achieved, and points of impact for future health education be formulated.

### **Contents of the study**

Given these objectives of the research, methodologically a combination of *quantitatively and qualitatively oriented approaches* is needed. Before starting the actual research project, we conducted a feasibility study (October 1989) to investigate whether research on this topic would be scientifically and socially relevant in this particular area of South India. Interviews were conducted with the help of a local Non-Governmental Organization (NGO) in Dharwad town, the India Development Service (IDS). The results of this feasibility study were positive and the actual fieldwork in the Dharwad District in Karnataka started in December 1990. The fieldwork period lasted 20 months, to August 1992.

We started the fieldwork with a census in the eleven research villages. The total population consists of more than 2,000 households and 12,000 individuals. Besides collection of background information about the research area, the main objective of the census was to gather information on household composition in

order to select women who might become pregnant in the forthcoming months. The actual research on nutrition during pregnancy started in May 1991. Data on food intake, weight gain, skinfold thickness, birth weight, etcetera were gathered through surveys. Information about beliefs regarding food intake during pregnancy was gathered through in-depth interviews, participant observation, and key-informant interviews.

Nutritional behaviour during pregnancy takes place within an economic, social, and cultural context. We describe these situational, economic, historical, social, and cultural aspects of the research area. Most data were collected through the census, key-informant interviews and participant observation. A literature study completes the information. The settlement pattern of the research villages, their historical background, the religious and caste system, the medical system Ayurveda, the marriage system, and status of women were some of the subjects studied.

The actual study population consisted of 186 pregnant women. A distinction is made between characteristics prevalent before pregnancy and characteristics prevalent during pregnancy. With regard to the first, individual characteristics like the reproductive history and prepregnancy weight-for-height status but also socio-economic characteristics like type of family and socio-economic position of the household were researched. These maternal factors constitute the starting position of the child. In the second category (characteristics prevalent during pregnancy), the use of antenatal services, compliance with tetanus injections, iron tablets and food supplementation were studied. The custom of sending pregnant women to the house of their own parents for delivery, the custom of (dis)continuation of breastfeeding during pregnancy and physical activities during pregnancy were also noted.



Information about the beliefs of women themselves on quantity and quality of food intake during pregnancy are presented and beliefs of important others and motivation of respondents to conform to them are included. Beliefs with regard to other proper behaviour during pregnancy are referred to.

In order to get a more complete picture of maternal nutritional behaviour we subsequently consider the beliefs regarding food behaviour in the child's first month of life. Beliefs in this period are related either to health of the mother or to the health of her baby. Information about deliveries and the role of traditional birth attendants is also presented here. Last but not least, the final conclusions and a discussion of the results are presented.

## Chapter 2 The research area

A few years ago a research cooperation was established between the Department of Demography at the University of Groningen, The Netherlands, and the India Development Service (IDS), a Non-Governmental Organization (NGO) at Dharwad, in the state Karnataka, South India. Groningen University was approached to analyse data collected in the villages in which IDS conducts its activities.

The IDS, a rural development organization established in 1974, focuses on grassroot development by organizing programmes which meet the needs and priorities indicated by poor people themselves. Its programmes concentrate on improvement of economic circumstances (by stimulating income generating activities), and on topics like health, dairy raising, and recently also on environmental issues. The health programme emphasizes preventive aspects such as the mobilization of people for immunizations and health education aimed at prevention of the most common diseases. Traditional birth attendants in the villages are given additional training while village health workers who are living in the villages, are trained by IDS staff in the basic principles of health.

### Selection of the research area

The same NGO was involved during a feasibility study on nutrition during pregnancy in Dharwad District, in 1989. The study indicated that the area most suitable for research would be the rural area around the city of Dharwad. Dharwad, a small district town, and headquarters of the District of the same name, is an educational centre and provides excellent research infrastructure. Besides Karnatak University (Department of Anthropology) where



local guidance was kindly offered, library and research facilities could also be found at the University of Agricultural Sciences and the Population Research Centre, Dharwad.

The researcher, being an outsider and a foreigner, could not expect to be easily and quickly accepted in an Indian village. This fact, as well as the vastness of the study, suggested that a first introduction by an organisation known in the villages, and recognised by the inhabitants, would be very helpful. Therefore, villages where IDS conducts its activities were chosen, and we gratefully acknowledge its help.

### **Getting acquainted to the research area**

The researcher too has to attune herself to the villagers, to understand what they said and “hear” what they meant. For this, first of all, a knowledge of the local language, Kannada, was absolutely essential. She underwent an initial orientation course in The Netherlands itself. This was followed by an intensive, daily, private course, lasting six weeks, in Dharwad. She achieved an increasingly active knowledge of the language during her stay of 20 months in the research area.

To collect reliable data on highly sensitive topics like pregnancy and childbirth, a close rapport with the people must be established. Language alone is insufficient. So, the researcher wore Indian clothes .... mostly salwar-kameez, or, during functions and festivals, a saree, and, in addition, ornaments such as glass bangles, ankle-chains, toe-rings (to indicate marital status) .... which appeared to be very helpful to overcome the initial distance between researcher and informant.

Even so, adaptation to the Indian way of life and behaviour, and establishment of close rapport with the village folk took a good six months. Interestingly, the visit of the researcher’s husband from

The Netherlands, apparently confirming her social status, suddenly speeded up her acceptance in the villages.

Helping in the process of participation was the fact that the research assistants .... each with their own social background ... lived in the villages themselves. Daily sharing of meals and constant interaction with them aided in the researcher's understanding and absorption of the rural, cultural and social milieu.

While, on one hand, being a foreigner and an outsider might be disadvantageous, it has its plus points as well. For example, visits after childbirth, a period in which the wet mother is supposed to be secluded from the outer world, would not have been allowed to an Indian researcher. Whereas the foreign researcher, being alone and a woman, as well as a student, all the way from Holland, who could not be expected to know the Indian customs, opened doors which would have been closed to Indian counterparts.

### **Location of research villages**

Ecologically, Dharwad district is divided into three regions: the *malnad*, semi-*malnad*, and the northern *maidan*. A belt of 20-30 kilometres, situated in the western part of the district, is categorized as *malnad* region. It is characterized by a rugged landscape with a number of hills at higher elevation, is forested and receives a moderate to heavy rainfall. The transition zone of semi-*malnad* gradually develops to the east, as both rainfall and vegetation decrease. The *maidan* in the east is a plateau landscape: a huge plain with some isolated hills. This region receives less rain and is extensively cultivated with crops different from those grown in the other areas.

The research villages are all located in the western part of Dharwad *taluk* (see Figure 2.1) in the semi-*malnad* area. Some of



the villages in the southern part of the area, i.e. Holtikoti, Mavinkoppa, and T. Ramachandran Nagar are located in a forest reserve area. Devageri, Lalgatti and Devarhubli are located just outside the reserve area. Mugad is the largest village. It is located close to Dharwad and therefore, more urbanised than others.

The other villages are Mandihal, Warava Nagalavi, Goutan Nagalavi, Station Nagalavi, Ramapur, Veerapur and Kallapur. Station Nagalavi, as the name indicates, is located near the railway station. Trains between Hubli and Goa pass through this small village, which (at the time of the research) displayed a huge installation of solar collectors whose energy was used for the railway system.

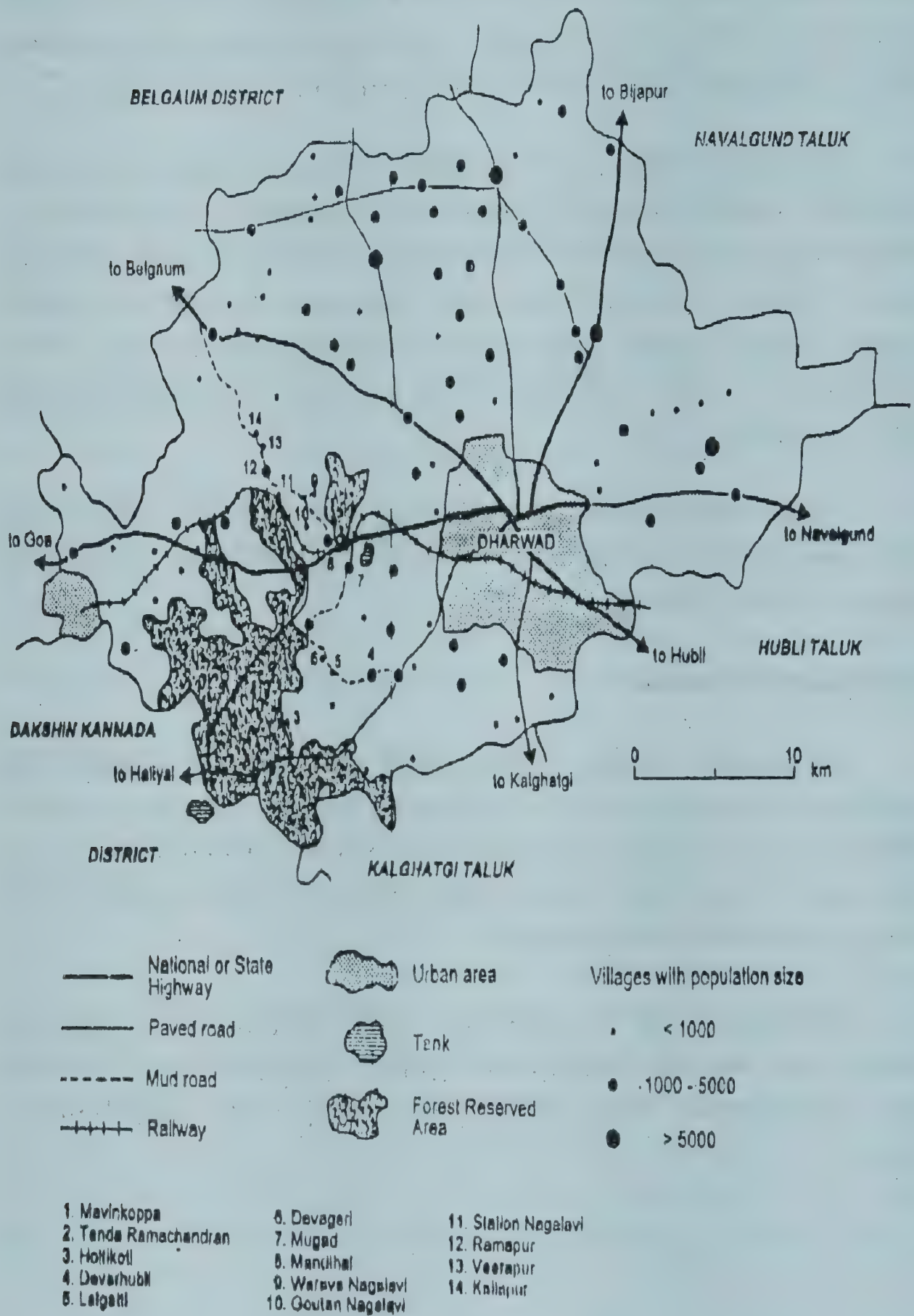
Some villages are comparatively easy to reach. Others are more isolated in that they are virtually cut-off from civilisation during the rainy season.

### **Settlement structure**

The older villages, Devarhubli and Mugad, exhibit the settlement structure of traditional Indian villages: certain groups of people are represented in certain areas. A concentric pattern can be discerned ... the higher caste groups located in the middle of the village, the lower at the outside.

In Devarhubli, for instance, the Brahmins reside in their colony, near the old Ranganath Temple. Lingayats and Maratha and a few people from other castes dwell in the neighbouring streets.

Figure 2.1 Location of the research villages in Dharwad taluk



Derived from Das 1984



Here, also the three families of carpenters live next door to each other. In the adjacent neighbourhood, a few potters (Kumbar) live, their houses full of pots, tiles and other earthenware. A Muslim colony is situated nearby. The Harijans inhabit their own street (Harijan *oni*) near the entrance. Unlike other Indian villages, where separation of Harijans from the main village has been noted, here, this is not the case and Harijans reside in their own street within the village. A proportion of the villagers live outside the fort (the village used to be a fort once) in Janata plot houses, built for the poor under a special Government scheme. A variety of castes lived here: Lingayat, Maratha, Muslim, Harijan, Walmiki and a Brahmin family (conducting social work in the village) as well.

The same traditional pattern can be seen, although on a larger scale, in Mugad, where the Jains live in their colony at the top of the hill, the fishermen in the Bovi *oni* near the watertank, and the basketmakers in another street, together with the potters.

The other villages are smaller, more recent settlements, and usually consist of only a couple of streets, and whose residents usually work in one place ... say, the stone quarry.

Nowadays, most of the houses in the villages, are built of mud and stone, the roof comprised of tiles. Only a few houses still have thatched walls and roofs. In the traditional house, there is a verandah. In some cases a small room (or two) is attached to the verandah. On the verandah, people sit and talk while chewing their betel-leaf (*yeele*) with areca-nut (*adike*) and lime (*sunna*).

The main room of the house is usually divided: the people live in one part, the cattle, which stay inside the house at night, in the other. A huge 'basket' made of bamboo mats, stores the paddy harvested the previous year. When more than one household resides in a house, each household lives on its own plateau, using its adjacent kitchen.

The average number of people per household is 5.7. But, in Devageri, one house had as many as 34 inmates, whose names the head of the household was hard-put to remember.

At the time of the research all but one village (Goutan Nagalavi) were supplied with electricity, but only 38.9 per cent of all houses were actually electrified. All villages had either borewells or public taps for water supply.

## **Health facilities**

In Karnataka, national primary health units, managed by the central government, serve a population of 80,000 to 120,000 people. In addition, primary health units, managed by the state, serve a population of 10,000-15,000 people. In the research area, such a Primary Health Centre is located in the village of Mugad. This centre is managed by a medical doctor and a nurse who can be consulted daily by the villagers. A new building constructed in 1992 lacks equipment, and so the villagers depend upon Dharwad, Haliyal or Alnavar for health services, or wait for a visit by private doctors travelling from village to village.

The Auxiliary Nurse Midwives (called local nurses) who is affiliated with the State's Government's Department of Health and Family Welfare looks after mother and child care. Some nurses live in Dharwad and travel daily to the villages while others choose to live in the villages. They take care of antenatal check-ups of pregnant women, distribution of iron and folic-acid tablets, immunization of mother and child etc, as well as family planning advice and aid. Mother and child health care is also provided by the *anganwadi* which is part of the Integrated Child Development Services (ICDS).

In addition to the formal health sector, traditional health services are prevalent in the research area. There is a homeopathic



doctor in Kallapur, and a religious traditional healer in Mugad. In addition, villagers visit traditional healers in other villages. Services provided by the traditional birth attendants, the *dais*, are discussed in Chapter 8.

### The demographic context

The population of Karnataka is estimated at 4.48 crores, or 5.3 per cent of India's total population (1991 census). Dharwad District has a population of almost 35 lakhs. While the 1991 census places the population of Dharwad *taluka* at 2.07 lakhs, this does not include the twin-cities of Dharwad and Hubli, whose population alone is estimated at almost 6.5 lakhs. However, since Hubli is not part of Dharwad *taluka*, and 75 per cent of the twin cities live in Hubli, we can safely predict the population of Dharwad *taluka* to be close to 3.71 lakhs.

Compared with national figures, Karnataka has lower Crude Birth Rates (CBR) and Crude Death Rates (CDR), except in urban areas where rates are exactly the same. Karnataka also has a lower decadal growth rate for 1981-91. The Infant Mortality (IMR) in rural Karnataka is 79 per 1,000 live births (1993), a considerable reduction from 89 per 1,000 live births in 1989.

The 1991 census showed a decline in the sex ratio in Karnataka during the previous decade, from 963 to 961 females per 1,000 males. But this figure is relatively high compared to the national figure of 929. Dharwad District also showed a declining sex ratio from 948 to 945 in the same period. Similarly, Dharwad *taluk* also followed suit, the figures for 1981 and 1991 being 960 and 948 respectively. (All figures are per 1,000 males).

As for literacy, while the national average is 52.1 per cent, Karnataka has a higher-than-average figure of 56 per cent. However, the figure for Dharwad District is 48.8 per cent (male

59.4 per cent, female 37.5 per cent). Even so, the literacy level in Dharwad *taluk* (excluding Dharwad town itself) is very low, being only 31.2 per cent: the figure for women being an abysmal 27.1 per cent as compared to 49.4 per cent for men.

The average age of marriage for men and women in Karnataka has been estimated at 25.9 and 19.2 years respectively, by the Government of India (1991). These figures seem to be very high and are perhaps so because, by law, girls cannot marry off until they reach the age of 18 years .... this seems to be leading to a misreporting of age during government surveys.

Our census revealed that the average age of marriage is 14.8 years for girls and 22.7 years for men. These averages, however, include about 20 per cent child marriages (where girls were married off between the ages of three and 16 years). Since consummation of these marriages take place only after the girl has reached maturity (the average period between attaining maturity and consummation of marriage for women in the study population was 1.3 years), the average age of consummation of marriage is 15.7 years.

### **The historical context**

Mugad and Devarhubli are beyond doubt the oldest villages. In ancient times Mugad was the headquarters of thirty villages and was known as Mugunda. The oldest inscription found in the village is dated 1045 A.D. and belongs to the Chalukya king Someshvara. The inscription found in Mugad describes grants given to a Jain temple and mentions a certain Jain school which was highly influential in those days. Jains still play an important role in this village.

Villages like Nagalavi, Ramapur, Kallapur, and Veerapur were established in the last century. Formerly, this area was thickly forested but it gradually became more and more deforested due to



the extensive use of trees for fuelwood. In the latter three villages, the fact that Dharwad District formerly belonged to the Bombay Presidency is reflected in the overall presence of the Maratha caste.

The name Veerapur came into being in the following way. The first inhabitants of the villages kept goats. And one night, a cheetah came and killed some of the animals. Hearing the noise, the people came out of their houses, fought the cheetah and succeeded in killing it. Since then, the place has been called Veerapur: the word *veera* meaning courageous and *pur* meaning locality.

Another example of an older settlement is Holtikoti, although the village as it is today has existed only since 1951. This village has a particular history which was narrated to us by the retired Brahmin village headmaster.

Formerly Holtikoti was recorded as Hanakooti, *hana* meaning wealth and *koote* meaning a town surrounded by a wall, a fort. The village was governed by a ruler named Naganagowda, whose brother was married to a beautiful woman. Naganagowda fell in love with his brother's wife. One day, on her way to the temple dedicated to the snake god in order to perform a *puja*, Naganagowda saw her walking and followed her. There, he grabbed her hand. In local language this means that he propositioned her to sleep with him. The woman feeling harassed conducted her *puja* and prayers to the snake god. The snake, a cobra, heard her prayers, and came and bit Naganagowda. He fell down and she went home. The next morning a lady sweeper (*hoolati*: literally meaning a lower caste woman) came to the snake temple and there she discovered the ruler lying on the ground. On seeing his dead body, she prayed to the snake god. And ... hearing her prayers, the cobra came and took the poison out. Naganagowda woke up, alive and safe. On seeing the lady sweeper, the ruler thanked her saying:

“I will name the fort after you. Instead of Hanakooti it will be Holati kooti from now onwards”.

The story continues: Naganagowda asked the lady sweeper to seek a boon. And she said:

“let no one here die of a snake bite”.

Since that time, the story goes, anyone who is bitten by a snake is kept inside the temple with the doors closed. The family members conduct a *puja* to the snake, and the cobra comes and takes the poison out.

This story of Naganagowda is supposed to have taken place a long time ago, the old teacher told us, in the 19<sup>th</sup> century. Besides the interesting narration itself, the story reveals some of the social relationships in Indian society, like the one between a man and the wife of his brother.

In the forties, in the present century, an epidemic of cholera hit the village of Holtikoti. Many people died and many others migrated to nearby villages. Only a few families decided to stay. In 1950, a huge fire destroyed the whole village except the snake temple. The few families who still resided in the village built a new village in 1951, about two kilometres to the south. Slowly more and more families came back and new ones settled, making up the village now known as Holtikoti. The snake temple which played such an important part in the history of the village, is located in the old village. The inhabitants of Holtikoti still go there to worship, walking two kilometres through the fields to reach the temple.

The other villages are recent settlements and consist predominantly of one caste group. Goutan Nagalavi for example is a settlement of people working in the stone quarries and most people belong to the Vodda caste, traditionally related to the occupation of stonecutting. Another example is T. Ramachandran Nagar, a hamlet with one row of fifteen houses situated along the roadside, which consists of one tribal community, the Gouli. The



Gouli are semi-nomads: during the summer men wander around with their cattle. Traditionally, their huts are built from wood and sticks and are located in the dense forests. However, the forest area now falls under the reservation act and the Gouli have been rehabilitated in places outside the forest. The inhabitants of T. Ramachandran Nagar came from two or three different dwellings in the surrounding forest area and settled down, some twelve to thirteen years ago, in this small hamlet. Their permanent houses are built with the help of the government.

### **The economic context**

The most important source of income for 57.3 per cent of the villagers is agriculture. During the time of research, a woman earned, on an average, rs 10 per day, while a man earned rs 12-15. The most important food crop cultivated in this semi-malnad region is paddy (mostly dry, some wet), while wheat and jowar are minor crops. In addition, pulses such as horse-gram and green-gram, vegetables like tomatoes, brinjal, cucumber and leafy vegetables, and spices like mustard, sesame and chillies are grown. The main cash crop is cotton. Sugar cane and bananas are grown on a few plantations. The crops are different from those cultivated in the maidan area (which starts just a few kilometres to the east of Dharwad town) where people cultivate more crops like potato, peanut and maize.

Animals were, and are, of course a major economic asset. Bullocks have a significant role for every farmer who owns land. A pair of bullocks is used for ploughing, for transporting goods in bullock carts and for threshing paddy. The value attached to the animals is reflected too by the special resting day for bullocks: on Mondays they do not work because they are identified with Shiva's bull, Nandi, and Shiva is worshipped on Monday.

Wage labour consisted of agricultural wage labour, which is especially needed during the harvest season, but also of other economic activities. Traditionally, caste groups are associated with a specific occupation. For example, most of the Panchals are still engaged in making tools for farmers in the villages, the Kumbar make pots, the Kurbar are traditionally the shepherds and some still weave blankets and so on. But, nowadays, this association has become weaker and a number of people are engaged in agriculture. For instance, a quarter of the Panchal caste group, all but one Madiwalar (*dhobi*) family, and 30 per cent of the Vodda, or stonecutters, cultivate land.

### **The cultural context**

We now focus on the cultural aspects: religion and the medical system Ayurveda.

#### *Religion*

A majority of the villagers in the research area adhere to the Hindu religion. Our census showed 89.4 per cent to be Hindu, 9.3 per cent to be Muslim, one per cent tribal (Goulis) and only 0.1 per cent (three households) Christian.

Hinduism is present everywhere in daily life. It is not so much a religion as a way of life. Astrology also plays a vital role in society, dictating auspicious dates for a variety of activities whether religious, social or agricultural.

There are basic principles of purity and pollution in Hindu society. In the villages, some principles are observed, such as those dealing with menstruation, child birth and death. When we conducted interviews among the Madiga (Harijan) women in their street in Mugad, we had to make a roundabout way home. Having been in the Harijan street for several hours we were highly polluting for the people we would meet on the road.



Another example: the Brahmin assistant in the research project had no problem with measurement of Madar women, but when she measured the weight of a new-born child she had to take a bath before entering her own house again.

While rules of purity and pollution are observed in the villages, some rules have to be relaxed, if only for purely practical reasons: water, for ritual cleaning, is scarce, and very often, there are no new or clean clothes to put on.

### *The medical system Ayurveda*

With respect to food intake and health status of the mother and child, the medical system Ayurveda is very important. Like the Hindu religion in general, the ideas prevalent in Ayurveda are very much integrated in people's daily life. Most people are aware of the *tridoshas* which are central in Ayurveda ... the three concepts of *vata*, *pitta* and *kapha* which have to be balanced in the body in order to keep good health.

For instance, some foods are classified as heating (*ushna kaavu*), such as papaya, while curds and buttermilk are said to be cooling (*tampu*) to the body. Neighbours in Dharwad warned the researcher not to eat too much potato (as she did as a good Dutchman) because it would create too much *vata* and give gas problems in the gut. As time of the day also plays an important role, the villagers told us not to work too hard during the middle of the day, especially during summer, since this would create an excess of heat, leading to pain in the eyes, red skin, headache etc.

Besides the overall presence of beliefs related to Ayurveda among laypersons, there are Ayurvedic practitioners who have received an education at one of the Ayurvedic colleges. These medically trained people are established doctors in, for example, Dharwad. Medication consists of diet prescriptions regarding a

change in way of living. But yoga and meditation, treatment with gems, physical training and surgery may also be prescribed.

### **The social context**

The major castes present in the research area were as follows. As many as 25.0 per cent of all households in the research area were Lingayats, another 19.9 per cent were Marathas. Walmiki and Kuruba were 7.7 and 7.6 per cent respectively. The Jains, who were concentrated mainly in Mugad village, were 5.1 per cent, while Brahmins, who are ranked highest in the Hindu hierarchy, constituted a mere 0.8 per cent, or 17 families only. Scheduled castes or tribes accounted for 19.6 per cent.

About 9.4 per cent were Muslims, the majority of whom lived in Mugad. The socio-economic status of the Muslims in the research area varied greatly. The groups in Devarhubli and Mugad were very prosperous and ranked very high in the socio-economic hierarchy. Many others, however, in other villages, belonged to the poorest families. There were also some Sidi (said to originate from Africa) who were Muslims, and who lived mostly in Mavinkoppa.

In the whole research area only three families were Christian and all three lived in Mugad. The Goulis in T. Ramachandran Nagar were the only tribals in the research area. Most still spoke their mother-tongue, their manner of dressing, their ornaments and tattoos being distinctive.

### *Types of households and family*

The basic social unit in the village is the family or *kutumba*. The family is distinguished from a household, the former constituting a social unit on the basis of blood ties. Most households are headed by men, but still 15.5 per cent of all heads of household in the research area were female. The majority (92.4 per cent) of these women were older than 30 years and 80.7 per cent of them were widows.



Two different types of households can be distinguished here: the single household and the co-residing household. In the first category, a household, defined as a group of people preparing their food in one kitchen and keeping a common household account, lives in one house. In the second category, one household shares a house with other, family-related, households. Each household occupies its own part of the house, has a separate kitchen, and keeps a separate household account.

In the study population 24.7 per cent lived in such a co-residing household. The maximum number of households living in one house was found in Mandihal, where six households shared one house (which therefore had six kitchens). This form of co-residence is partly related to the breaking-up of joint families, where members do not move out of the house altogether but occupy a small place under the same roof, but with a separate kitchen and account.

Regarding the family, two broad categories can be discerned. A nuclear family constitutes husband and wife living with their unmarried children. A joint family consists of one or two parents living with their sons and their wives and their children.

Combining the two classifications, a single household and nuclear family constitutes the family commonly known as nuclear. A single household and joint family is the more traditional form of household. Joint families are usually affordable only for the richer families. In the co-residing families, whether nuclear or joint, people keep their own household but still have the advantage of living together with family members in one house.

In reality, there are also variations in the kinds of family patterns. Sometimes a daughter's child stays with the maternal grandparents. Sometimes (and this is usually where there are no sons in the family), the son-in-law comes to stay with the wife's family.

So, in the research area, adding one parent families, 40.9 per cent of all households lived in nuclear families. People living alone constituted 3.4 per cent. Another 30.9 per cent lived in single households, joint family; 17.3 per cent in a co-residing household and nuclear family; and only 6.4 per cent in a co-residing household and joint family.

Of course, this whole classification of families is an ever-changing concept, because a joint family today could split into nuclear units tomorrow, or a nuclear family today can turn into a joint family tomorrow with the marriage of sons.

### *Status of women*

The position of women in Indian society is reflected in the sex ratio. As mentioned earlier, in Dharwad *taluk* this ratio is 948 females per 1,000 males, while in the research area it is still lower: 922 females per 1,000 males. The low sex ratio indicates a higher mortality among women and reflects the preference for sons in this society. Elsewhere in the country, female foeticide is one of the extreme expressions of this preference. Other studies have also proved that girls are breast-fed for a shorter period, receive less food during childhood, less health care and attention. Maternal mortality during the reproductive age adds to the high percentage of female deaths.

In this patrilinear society, a girl is seen as only a temporary member of her natal family: after marriage she will be part of her husband's family. This is not only indicated by a change in surname after marriage, but, sometimes, if the husband's family chooses to, even a change of her first name as well.

The nature of her temporary residence at her father's house has important consequences. It is not considered worthwhile to invest in a person who will leave the family ... hence girls receive less education than boys. Also, since hypergamy is practised



(where girls marry boys with higher education or higher social status than themselves), a higher education means a higher dowry.

Immediately after the wedding ceremony several customs ensure the gradual adjustment of a girl to her new family-in-law. During her first days in her husband's house, a sister or other female family member stays with her. After this period, she is regularly allowed to travel home and stay with her own parents. Household duties are slowly allocated to her. However, she must adjust to her family-in-law, and, the relationship with her mother-in-law, especially, can be sensitive.

A married woman can improve her status by giving birth to a child .... it is proof of her fertility. If the child is a boy, and more sons follow, to continue the family line and take care of the death ritual later on, then her status is further improved.

This determination of the status of women by their reproductive role is finely illustrated by three events considered to be important in a woman's life. Each is celebrated with a ceremony, during which a special song, a *sobhaana*, is sung by women. The first ceremony is related to the reproductive cycle and is conducted at the time of maturity when a girl is supposed to have become 'big' (*dodakke*) and ready for marriage. The second *sobhaana* is sung by women from the husband's family during the wedding ceremony. The third ceremony is conducted during the first pregnancy (*kubasa*).

Besides reproduction, women play an important role in production. In general, women have to work hard in their husband's place, whether at home or outside in the fields. There are rules as to when a woman can be sent to either her natal family, and vice-versa. The term 'sent' gives an idea of the lack of control women have over their own lives. At an older age however, especially if they have given birth to sons, women can improve their status and have more power: being a mother-in-law themselves, they can supervise their own daughters-in-law

## Chapter 3 Theory and facts

In this chapter we present some facts about maternal and child health in India and review several studies on nutrition during pregnancy. (All the references to the studies themselves can be found in the original dissertation; see also preface).

Infant and child mortality in developing countries has declined considerably during the last 40 years, but the rates are still unacceptably high. While under-five mortality rates in developed countries are 17 deaths per 1,000 live births, the corresponding figure for least-developed countries is 180 deaths, though in South Asian countries like India, it is lower still, being 126 (all figures are per 1,000 live births).

While infant mortality in developing countries is ten times higher than in industrialized nations, maternal deaths are even a hundred times as high. Maternal mortality in Western Europe is around 10 per one lakh live births, while South-Asian countries have one of the highest figures of 600 death per one lakh live births.

### **Maternal mortality**

As stated before, given certain conditions and definitions, the life time risk of dying from pregnancy and child birth in India is one in 27. Medical causes of maternal mortality can be divided into direct, indirect and coincidental categories. Direct causes are diseases or complications which occur only during pregnancy and childbirth such as abortion, ectopic pregnancy (pregnancy in the fallopian tubes) etc. Indirect causes are diseases which may have been present before, but are aggravated by pregnancy such as anaemia or diabetes etc. Coincidental causes are factors not related to pregnancy such as accidents, for example.



In India, 75 per cent of maternal deaths are attributed to direct causes such as haemorrhage, sepsis, abortion and toxæmia. An important indirect cause is anaemia, accounting for 15-20 per cent deaths, as also viral hepatitis.

According to one study, whereas maternal mortality is 205 per one lakh live births in the age group of 20-29 years, it is a high 334 for women under 20 years, and an even higher 395 for women above 30 years of age.

Studies indicate that most maternal deaths are preventable, and cite related factors, access to, or lack of which cause mortality rates to go up. Access to health services and antenatal care is important. Lack of transport facilities to avail of health services, for immediate transference to hospitals in case of emergencies, is a factor to be taken into account. The place of delivery (at home or hospital), the kind of medical services provided (by professionally trained medical doctors or traditional birth attendants), and economic, social and cultural factors, such as the economic status of the household, the status of women and notions regarding pregnancy and delivery, all play a crucial role in maternal mortality.

### **Child mortality**

Under-five mortality in India stands at 126 deaths per 1,000 live births, while the corresponding figure for Infant Mortality rates (IMR) is 90. A more recent figure (1993), however, is 74. The IMR for Karnataka is 67, in rural Karnataka 79, while in urban centres it is 42 (All figures are per 1,000 live births and are for 1993).

Most deaths in the first year of life occur in the neonatal period (within one month of birth). In India about 60 per cent of all infant deaths take place in the first month of life. The neonatal

mortality rate for India is estimated at 47 deaths per 1,000 live births. The corresponding figure for rural Karnataka is 58.4 (figures for 1993). And, within this one month, most deaths take place in the first week of life.

### **Birth weight**

In India, the average birth weight is 2,700 grammes, one of the lowest figures all over the world. Moreover, its proportion of low birth weight children, 30 per cent of all live births, is one of the highest known.

In developed countries, low birth weight is predominantly due to preterm deliveries (below 37 weeks of pregnancy). It is assumed that in developing countries Intra-Uterine Growth Retardation (IUGR) is the causative factor. Causes for prematurity are mainly unknown. One of the factors pinpointed in the developed countries has been, apart from other reasons, smoking. In developing countries, the only factors identified are low pre-pregnancy weight and a history of premature births and spontaneous abortions.

Many related factors have been identified with regard to IUGR in both developed and developing countries. Apart from these, cigarette smoking is the main culprit in the developed world. On the other hand, malaria is a responsible cause in the developing world. Low food intake or low weight gain during pregnancy are other important factors.

### **Nutrition during pregnancy, maternal weight gain, and birth weight**

During pregnancy the body needs more energy (calculated in kilocalories) for the growth and maintenance of the fetus, the placenta and the maternal tissue. Theoretically, in a normal



pregnancy in industrialized countries, total maternal weight gain amounts to 12.5 kg. A quarter of this, 3.4 kg, consists of the weight of the fetus. Another 5 per cent (550 grammes) is accounted by the amniotic fluid; 13 per cent (1,600 grammes) by the extra-cellular fluid; and another 20 per cent (2,620 grammes) by the expansion of maternal tissue such as the uterus, the breasts and the blood volume. In such a 'normal' pregnancy, 3.5 kg, is stored as maternal fat reserves.

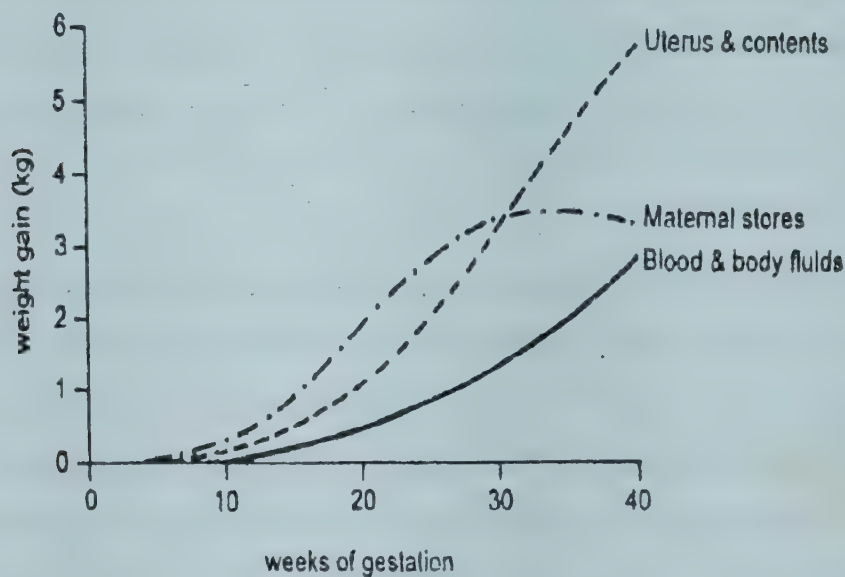
Based on these figures, a theoretical total energy cost of pregnancy of 85,000 kilocalories (i.e. 300 kcal per day) has been estimated. Energy requirements are highest for deposition of maternal fat (more than 36,000 kcal) stored between the 10th and 30th week of pregnancy. Another 36,000 kcal consists of an increase in the rate of basal metabolism. Fetal demands are the highest in the last quarter of pregnancy (see figure 3.1).

### *Recommendations*

Recommendations about nutrition during pregnancy have varied not only throughout the centuries, but during this century as well. The most recent international standard, recommended by the FAO/WHO, is an extra intake of 285-300 kcal per day, throughout pregnancy, resulting in a total average intake of about 2,500 kcal per day. The Indian Council of Medical Research, however, recommends an extra 300 kcal per day, only during the second and third trimester of pregnancy.

## Figure 3.1 The components of weight gain in normal pregnancy

Figure 2.5. The components of weight gain in normal pregnancy



Source: Hytten, 1980, p. 30.

### *Developed countries*

Four studies in industrialized countries indicate that women do not always increase energy intake during pregnancy, and, that if they do, the increase is small .... it is nowhere near the international recommendations of 285-300 kcal per day extra. But still, the average women are able to gain 11-12 kg during pregnancy, and to give birth to children weighing around 3,500 grammes.

In The Netherlands, for example, there was no change in the energy intake during the first two trimesters of pregnancy, there being a small, but insignificant, increase in the last trimester only. Average maternal weight gain of Dutch pregnant women was 11.6 kg, and mean birth weight was 3,458 grammes.

In Scotland, a gradual, though not significant, increase in energy intake was noticed. The average increase in energy intake over the whole period of pregnancy was estimated at just 75 kcal



per day. The maternal weight gain was, however, 11.7 kg, and average birth weight 3,370 grammes.

A study in Australia, on the other hand, noted that energy increase during pregnancy did not occur at all. Yet, maternal weight gain amounted to 12.4 kg and mean birth weight was 3,450 grammes.

### *Developing countries*

In developing countries few studies have been conducted, where women have been followed throughout pregnancy and valid measurements kept track of. A study among 44 poor, rural women in Thailand suggests an overall increase in energy intake. The average weight gain among them was 8.9 kg, and the mean birth weight was estimated at 2,980 grammes.

A study of Mexican women found a decline in energy intake in the last part of pregnancy. In this period women gained, on an average, 6.8 kg. The mean birth weight was 3,382 grammes and the proportion of Low Birth Weight children was zero.

In The Phillippines, also, a slight, though insignificant, decline was noted in the second and third trimesters of pregnancy. Weight gain was 8.4 kg, and mean birth weight 2,885 grammes.

While the differences in maternal weight gain and mean birth weight between the industrialized and developing countries are high, not much difference exists within the latter countries.

Within India only a few time-bound and sustained studies have been undertaken on food intake during pregnancy. Some studies, however, point out that energy intake, weight gain and birth weight differ widely between socio-economic groups. The upper income class shows a pattern similar to women in industrialized countries; average daily intake between 2,000 to 2,500 kcal per day, mean maternal weight gain of 11 kg, and mean

birth weight of 3,200 grammes. The lower income urban groups have average energy intake of 1,200-1,600 kcal, average maternal weight gain of 6 kg, and mean birth weight of 2,700 grammes. The low income rural women register a mere five kg in weight gain.

### **Food supplementation, weight gain and birth weight**

Many studies have been conducted in various places, ranging from Birmingham (UK), San Francisco (USA), Indonesia, India, Taiwan, Colombia and Chile (S.America) etc, on the effect of food supplementation during pregnancy on maternal weight gain and pregnancy outcome, i.e. the results of a pregnancy whether it be a live birth, an abortion, a still birth etc. The results of these studies are not unanimous. Some studies found a positive effect, some no effect, and one study, in Birmingham, even found a negative effect, saying there was a decrease in birth weight.

It is, therefore, not clear whether any changes in weight gain and birth weight are really due to the supplementation programme, or to other factors such as prepregnancy weight-for-height status, extra antenatal care, seasonal variation, extra rest or a reduction in physical activities.

### **Intervening factors**

In this section, we focus on these other, intervening factors.

#### *Physical activity*

One of the most important complicating factors in the relationship between energy intake and maternal weight gain is physical activity. Weight gain during pregnancy is a direct consequence of the energy balance, i.e. the difference between the intake of energy and the spending of energy. Thus, changes in maternal weight gain during pregnancy could be due to a change in either of these two forces, or in both. For more technical details we refer to the dissertation.



### *Prepregnancy weight-for-height status*

Another very important factor is the mother's body size .... her height and her weight before pregnancy ... this is referred to as prepregnancy weight-for-height. Women who are taller, and therefore heavier, will consume more calories. This, in combination with high maternal weight, results in bigger babies. Similarly, low prepregnancy weight combined with low maternal weight gain results in small babies.

Prepregnancy weight-for-height status, is an important factor in our research since we wanted to know the effects of a reduction in food intake during the last trimester of pregnancy among women whose nutritional status is already poor before conception.

A better indicator than height and weight alone, of nutritional status before pregnancy, is what is called the Body Mass Index (BMI). BMI ( $\text{weight} / \text{height}^2$ ) is an indicator of Chronic Energy Deficiency (CED). A study already conducted in India finds that women with a higher weight-for-height ratio are more able to meet the demands of the growing fetus (perhaps by using up their own tissues), even when their dietary intake during pregnancy is low, compared to women whose pre-pregnancy ratio is lower and whose dietary intake remains the same.

Also food supplementation has proved to have the strongest effect among women with a low, pre-pregnancy weight-for-height ratio. Other studies have indicated that women with low pre-pregnancy weight-for-height status produce infants with lower birth weight, and the proportion of these infants is higher.

### *Age and parity*

The independent effect of age and parity on maternal weight gain are minor and found only among very young mothers. However, the relationship between age, parity and pregnancy

outcome (the final results of a pregnancy whether live, still birth or abortion) is more clear. Women under 20 years and above 30-35 years tend to have low birth weight children. Apart from this, parity also plays a role. Teenage mothers and primiparae (the very first pregnancy) give birth to infants with lower weight than older and higher parity mothers.

### *Anaemia*

Anaemia is not thought to be a true cause for Intra-Uterine Growth Retardation (IUGR), but a marker of maternal nutrition. The condition is often present before conception, and the haemoglobin level declines further during pregnancy. UNICEF defines anaemia as a haemoglobin level below 11 gr/dl.

In India anaemia is highly prevalent, especially in the lower income groups. Studies indicate that during pregnancy it runs between 40 -50 per cent of women in urban areas, and 50-70 per cent in rural areas, and even as high as 90 per cent in areas where hookworm is rampant. Studies in India find a high association between anaemia, prematurity and low birth weight.

### *Smoking and alcohol*

Smoking and alcohol do not affect maternal weight gain much, but studies indicate that they do affect birth weight negatively. While drugs are thought to affect birth weight, it is difficult to prove this conclusively.

### *Season*

In developing countries season might be a factor related to weight gain and birth weight. The availability of food, agricultural work to be done and the incidence of malaria differ between seasons. The woman's socio-economic status which dictates food intake and the amount of work is a related factor.



A study in Africa has indicated that during the rainy season overall food intake is inadequate which is reflected in a general loss of body fat, amounting to four kg, among women. Pregnant women who did not receive food supplementation, and gave birth at the end of the rainy season, suffered an overall loss of fat of 4.7 kg, while women who were pregnant in the dry season, when no agricultural work had to be done, gained three kilos body weight.

### **Effects of a reduction in food intake during pregnancy**

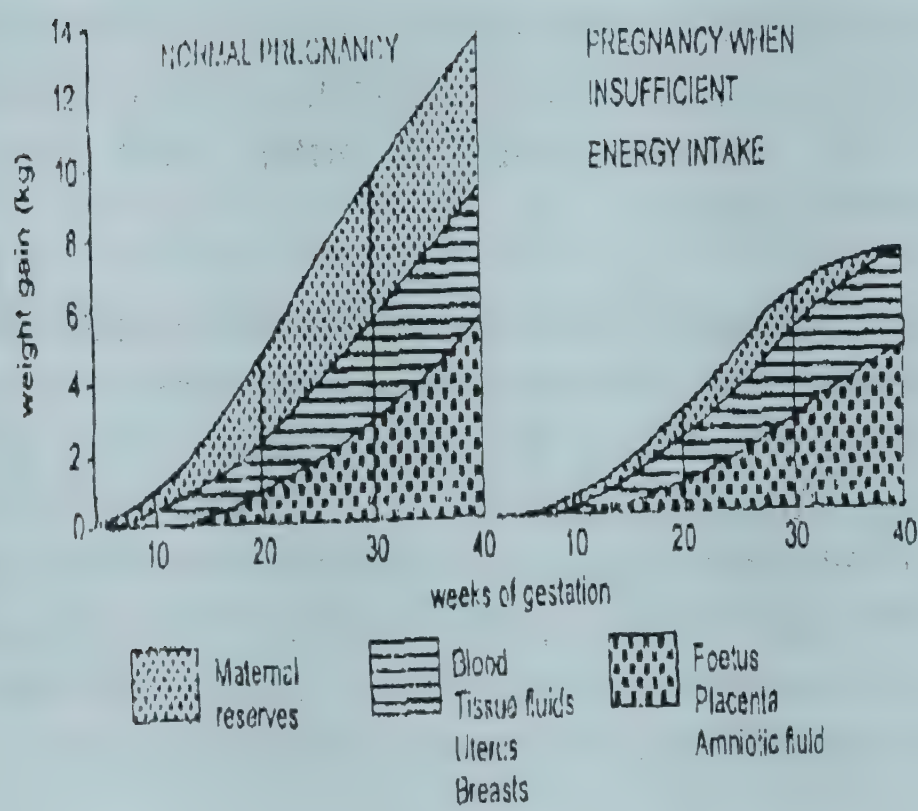
Studies conducted on low and middle income women in Mexico and rural Philippines indicate a slight decline in energy intake over pregnancy. Women gain less weight than their counterparts in industrialized countries: on average 6.8 kg and 8.4 kg, respectively. But, although the average birth weight in The Philippines was lower (2,885 grammes), in Mexico the mean birth weight (3,381 grammes) did not differ much from that of industrialized countries.

Another similar study, but this time on the effects of a (forced) reduction in food intake during pregnancy was conducted in The Netherlands during the Dutch famine winter of 1944-45. The average daily intake amounted to less than 1,500 kcal. Both weight gain and birth weight were reported to have been negatively affected. Women in their second and third trimesters gained, on average, 2.6 kg less in weight than normal, and their infants weighed, on an average, 300 grammes below normal.

In fact, according to the author of one study, the fetus stays safe and well-protected from the “vagaries” (fancies) of maternal food intake and acquires nutrients at the expense of the mother, even going so far as to threaten her life.

The following figure (see figure 3.2) illustrates this mobilisation of maternal fat. It shows that in the case of insufficient energy intake in the last trimester of pregnancy (when the growth of the fetus is highest) maternal fat reserves (which are stored between the 10th and 30th week of pregnancy) are used for the growth of the fetus.

Figure 3.2    **Influence of low energy intake in the last trimester of pregnancy on weight gain during pregnancy**



Source: ICC, 1985, p. 21.



Among women who are relatively well-nourished, like the women in The Netherlands were before the famine started, maternal reserves must have been sufficient to meet the growing demands of the fetus. However, what happens if, as in many developing countries women experience subsequent pregnancies with short birth intervals and are already in poor nutritional status when a next pregnancy starts?

A study in Gambia (Africa) noted that pregnant women seemed to be able to cope with such a situation through an actual decrease in basal metabolism and changes in physical activity. However, studies are unanimous that children of women with a lower pre-pregnancy weight-for-height status experience lower average birth weights. However, there seem to be limits to maternal depletion as well as a recent study in Indonesia suggests.

### **Survival, growth and development of children in the first month of life**

Studies which have compared the growth of infants from both industrialized and developing countries in the first month of life state that although their average birth weight has been estimated to be lower, children in the second group gain more weight than the others, over 300 grammes more. The difference is stated to be obvious in the first days of life. After an initial loss in weight, children in developing countries regain their birth weight in four to five days, while their counterparts in industrialized countries reach this level only after eight or ten days.

### **Factors determining food intake during pregnancy**

At the individual level, availability and access to food depends on socio-economic status of the household. Within the household, the manner of food distribution counts. For example, the women eat last, only after men and children have eaten. Also

pregnancy itself plays a part: nausea in the initial months can lower food intake. It is also determined by beliefs regarding what to eat during pregnancy.

The custom of reduction of food intake during the last trimester of pregnancy is reported to exist in different regions of the world, irrespective of season and socio-economic status. Women seem to lower their food intake precisely because they are pregnant.

### *Beliefs about food intake during pregnancy*

The reason commonly mentioned, in just one sentence, is that by this women hope to have an easy delivery by giving birth to a small child. However, one study in South India, found the exact opposite relationship between food intake and the size of the child: women believe less food means a bigger child. If they ate too much, they believed, there would not be enough room for the child to grow. We found the same response during our feasibility study in 1989.

One study conducted in Uttar Pradesh reported that women there believed that excessive eating resulted in a large child, and would consequently cause a high-risk delivery. Yet, when one woman who did not decrease her food intake delivered a small baby, she was blamed for eating so much that her tubes filled with food and the baby became cramped. These views are prevalent because of the general belief that the fetus grows in the womb and stomach together, and hence the space occupied by food is shared by the growing fetus.

A huge amount of literature is available on beliefs about quality of food intake during pregnancy. Though these studies were conducted in different states in India, and many differences exist, many similarities can also be observed. For instance, papaya is commonly thought to induce 'heat' (*ushna*) and thereby cause abortion. It is therefore generally out of bounds for pregnant



women. Egg and jambufruit are forbidden food items in some regions because they are thought to cause red and purple patches on the child's face. In other regions eggs are thought to cause the child to have a bald head. Pregnant women craving for bitter foods are believed to be carrying baby boys, while a craving for sweets is supposed to indicate a girl child. Plying the pregnant women with milk to which saffron is added is supposed to promote a fair complexion in the child to be born.

### *Influence of 'important others'*

Pregnant women have their own beliefs about food intake and other proper behaviour during pregnancy, but they will also be influenced by others, important among whom might be either laypersons (e.g. family members) or specialists (e.g. traditional birth attendants or health workers). The mother-in-law, in particular, is assumed to play an important part, and we also expect female neighbours to play a role.

Since another Indian custom is to send women to their parents' house for their first delivery, we expect first time mothers-to-be to be influenced by their own mothers as well.

## Chapter 4 Research questions, methodology and study population

It may be recalled that our research questions as stated before are the following. We wanted to know whether there really was a reduction in food intake, and if so whether this could be confirmed by quantitative data on food intake, and by how much this intake is reduced. We also wanted to find out whether all women ate less or whether this was practised by a particular group of women.

Moreover, we wanted to examine the effects of reduction of food intake, during the last trimester of pregnancy, among women whose nutritional status was already poor before conception. Our emphasis was on their health and on that of their pregnancy outcome. In addition, we have earlier indicated that birth weight alone would not be a sufficient indicator for the well-being of the child. Therefore, we studied growth and development of children in the first month of life as well.

The next research question focused on the reasons behind the custom of reduction in food intake in the last trimester as perceived by the women themselves.

### Methodology

#### *Research team*

With the help of the community organizers of IDS, seven assistants were selected from the villages. As English was the only way to communicate during the first months, a first criterion for selection consisted in an active knowledge of this language. Given the topic of research, there was a strong preference for female assistants. This criteria appeared to be more problematic: few



people in the villages - and certainly few women- spoke English. In first instance, seven assistants were selected, four men and three women. During the census, participation of male assistants was no problem. Later on, when the actual research on pregnant women started, the composition of the research team had to be changed: the male assistants were accompanied by a female helper. Each of the assistants was assigned work in their own village plus nearby villages.

### *Preparation and census*

The main objective of the census, besides establishing a rapport with the study population and collecting background information on the research area, was to gather data on household composition in order to select those women who might become pregnant in the forthcoming months. As mentioned earlier, the total population in the villages selected was estimated to be approximately 12,500 people.

### *Potentially pregnant women*

With the aid of the census about 1,000 women who had the potential to become pregnant, were short-listed for the research. Who were they? They were women who were married, who actually lived with their husbands, had not yet undergone sterilisation and had not crossed 45 years of age. The youngest married women appeared to be 12 years old. Women who were already in the fourth, fifth and sixth month of pregnancy were immediately included in the actual study population since the reduction in food intake takes place during the last trimester of pregnancy.

This group of potentially pregnant women was monitored by the research assistants on a monthly basis. Their height, weight, mid-upper-arm circumference and date of last period was estimated.

The number of 1,000 women was reduced with the elimination of young girls (child brides) who had not yet left their parental homes, women who moved to other places, women who stayed at their parents' house for personal reasons, women who had not initially mentioned the fact of their being sterilised in the census and the women who died in the intervening period.

Women who left for their parental homes for delivery also constituted a problem since they could not be followed up right till the end of their deliveries. Finally, only those who lived within a distance of 30 km from Dharwad were included in the project.

As soon as women became pregnant they were included in the actual study population. One interesting confusion in the procedure cropped up. One research assistant suddenly reported a large number of pregnancies in his village. Why this spurt? Investigation showed that, in reality, only a very few of those women were actually pregnant. Under some special government scheme for wage labourers, financial support in the form of rs. 300/- was to be given for the first two deliveries. Women were to apply for this scheme through the local government nurse. As the research assistant was married to the local nurse the women in the village associated him with the government too. Thinking there might be a new scheme and more money available, the women stated they were pregnant.

### *Pregnant women*

The study population consisted of 241 women living in 10 research villages. 55 women dropped out, some whose parents' house was too far away from the research operation for a satisfactory follow-up, some who were away from home too often to participate, some who moved out of the village and, at least 26 women who had a spontaneous abortion, defined as a pregnancy which ends before 28 weeks of gestation. This means that as much as 12.3 per cent of all pregnant women in the area had an abortion.



But there might be a small error in this estimate because of instances such as one woman who had had an abortion or just a delayed period. The final study population thus consisted of 186 pregnant women.

Nutritionists evaluated the food intake of the respondents<sup>1</sup>. Questionnaires were filled up and the women, their families, neighbours, the local medical personnel were exhaustively interviewed at medical, social and interpersonal level.

### *Measurement of the child*

Having followed the women throughout their pregnancy, the infants were followed up to one month after delivery. The children were measured immediately after birth and then once again one month after birth.

Children born in the research villages were weighed in time, i.e. within 24 hours after birth, with the aid of a Salter spring weighing scale (division 50 grammes). The problem arose, however, with the 60 per cent or more women who went to their parents' place for delivery. Finally we solved it by the use of kitchen scales (division 25 grammes) adapted by putting a bigger tray on top. These scales were given to the "expecting families", and some literate member of the family was asked to weight the baby within 24 hours after birth and mark the scale with non-washable ink. It turned out to be a good solution and we received a lot of cooperation in this.

However, this idea of weighing immediately after birth did attract some resistance, because of the concept of pollution .... an infant cannot be touched until five days after its birth. Somehow, this resistance was overcome because most of the research assistants lived in the villages themselves and used their powers of persuasion to let the infants be weighed. Yet, a lot of hand and feet washing had to be indulged in, and only very close family members

handled the infant while putting it in the weighing scale.

The infant did have to be touched, however, for height and head circumference. Where the family did object positively, the measurements were taken after the first five days. It is not very likely that big changes in measurement would occur in those five days.

## Study population

The study population, as we have seen, comprised of 186 pregnant women living in a rural area. In general, the population can be characterized as poor: only 10.8 per cent being relatively well-off. The majority belonged to the Hindu religion, a small percentage (10.2) to Islam. A very small percentage belonged to the tribal community, the Goulis, while one family alone was Christian.

The population had a high rate of stillbirths (51.9 per 1,000 pregnancies) and perinatal mortality (85 per 1,000 live births). (Perinatal death refers to death after 28 weeks of gestation and within 7 days after delivery). Of all the women, 17.7 per cent had experienced a spontaneous abortion or stillbirth at least once before. Furthermore, the population was quite young: most were aged between 14 to 24 years and had just started the reproductive process. Average parity was 1.8. The women married young, on average at 14.5 years, but the average age at consummation of marriage was 15.7 years.

The women were light and short: they weighed an average 41 kg before pregnancy while their average height was 151 cm. The

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<sup>1</sup> We gratefully acknowledge the help and support provided by the Home Science College, Department of Nutrition, University of Agricultural Sciences, Dharwad. In our research, we could make use of the standard measures developed by them for this particular area of India.



percentage of Chronically Energy Deficient (CED) women, as measured by their Body Mass Index, was high: more than half of the population. Of all the women, 13.0 per cent was severely CED, 18.3 per cent moderately and 27.8 per cent mildly CED. In addition, 18.5 per cent of the women were severely anaemic.

### *Child birth*

Of the final population of 186 women, 175 gave birth to 176 live births (one set of twins were born), 52.3 per cent girls, 47.7 per cent boys. The other eleven women experienced stillbirths. Three were fresh stillbirths (infants dying during the process of labour). Of the total stillbirths four were male, and three female. The sex of the others could not be distinguished. This implies a high stillbirth rate of 51.9 per 1,000 pregnancies.

Of the children born alive, four (two boys, two girls) died almost immediately after birth, either because of complications during delivery or because of congenital malformations. This perinatal mortality rate of 85.0 per 1,000 live births is much higher than the corresponding national rate of 50, or even the state rate of 57.0.

During the first month of life two more children died. This neonatal (within one month of birth) mortality rate of 34 per 1,000 live births is, however, lower than the corresponding national and state figures which stand at 58 and 62 respectively.

One woman died a few days after delivery due to viral hepatitis (an indirect cause of maternal mortality) bringing the maternal mortality to 538 per 1 lakh live births.

### *Individual characteristics: reproductive pattern*

The majority of the women in the study group were between 14 and 24 years old. As many as 42 women (22.6 per cent) were of zero parity, or, had not yet borne live children. All of them, except two, were between 14 and 19 years old.

As mentioned before, 17.7 per cent had experienced a spontaneous abortion or stillbirth at least once before. The average length of the last birth interval (time between two pregnancy outcomes) was 30.4 months.

Remarkable also, was the relatively high percentage of deaths due to congenital malformations (eight of the 33 children who died in the first year), like spina bifida, hydrocephalus, malformation of the limbs etc.

The mean age of consummation of marriage for the whole group was 15.7 years and the average duration of marriage at the time of study was 6.8 years. Of all women, 19.9 per cent married before having reached maturity, their age at marriage ranging from 3 to 16 years old. Child marriages are mainly arranged between kinsmen.

Among other women inter-kin marriages were also quite common. Data collected showed that 43.6 per cent of the women had a kin relationship with their husbands, while the remaining did not. Almost 27 per cent of the kinship marriages were between cross-cousins, either on the father's side (a woman marrying her father's sister's son: *sooder atte maga*), or on the mother's side (a woman marrying her mother's brother's son: *sooder mava maga*). Another 12.7 per cent were maternal uncle-niece marriages (a woman marrying her mother's brother: *sooder mava*). Only one case of a parallel cousin marriage (among the Muslims) was observed.

### *Socio-economic characteristics*

The study population of women reflected the general, religious composition of the total population. The majority, 86 per cent, were Hindus. About 10 per cent were Muslim, six women were Goulis and one was Christian.



In respect of the different caste groups also, the study group resembled the total population: 28 per cent were Marathas, 20.4 per cent were Lingayats and so on, the lone Brahmin woman having to drop out of the study since she, unfortunately, experienced a spontaneous abortion.

Women ranging from the very poor to the rich were included in the study. Estimated income ranged from 900 to more than 50,000 rupees per year.

As regards primary source of income, more than one third (34 per cent) of the women lived in households which are involved only in agricultural activities. Another 28.5 per cent were primarily engaged in agriculture activities, but depended on wage labour as a secondary source of income. In addition, 21 per cent were engaged in wage labour only. About 73 per cent of all households held land in some manner, privately or leased, ranging from 0.1 to 30 acres.

The level of literacy among the study population was very low. Most women, 81.9 per cent, had received no formal education at all. Among the rest, over half (18 out of 33 women) had completed standard four or lower.

#### *Antenatal care*

All but three women reported that they had received antenatal check-ups. While 34.1 per cent were examined only by the local nurse, a good 64.2 per cent paid at least one visit to a hospital or private doctor in a nearby city. Most women went only once to check that everything was alright.

This use of antenatal health services users is surprisingly high compared with figures cited in other studies. Here, distance did not seem to matter since women living in the more remote villages also visited a hospital or doctors in a nearby town. The only

variable found was that women with higher education, as well as those from a higher social class, paid more antenatal visits to town.

There was a difference in parity, however: 81.6 per cent of zero parity women attended health services more frequently. Higher parity women often remarked that they already had been through the experience before and therefore did not require these services.

#### *Compliance with tetanus injections and iron tablets*

All but five women received tetanus injections during pregnancy. While 55.2 per cent received only two (of the recommended three), almost 30 per cent received only one.

The five women who received neither tetanus injections (nor iron tablets) belonged to the higher parity group. Interestingly, they reported that after previous pregnancies the local nurse (who has to reach sterilization targets) wanted them to have an 'operation'. As they refused to cooperate, they did not receive the usual antenatal care from her during the next pregnancies.

As for consumption of iron tablets ..... most women initially stated that they did so. But, during the in-depth interviews it became clear that most women did not really take the red tablets, or "tonic" tablets, as they are called by the villagers. Only 15 per cent said they took the tablets; a good 80 per cent said they just threw them away, and the remaining took only half the tablets.

This high percentage of non-compliance stems from the villager's firm belief that the tablets will lead to the birth of a big child. Quite apart from the fear of pain and difficult labour, economic reasons play a role as well. A big baby and difficult labour leads to hospitalization, and a Caesarean section, both of which require extra spending.



As one young birth attender reasoned: it is logical that women associate the tablets with the health of the child and not their own health; if not, why should they be given to pregnant women only?

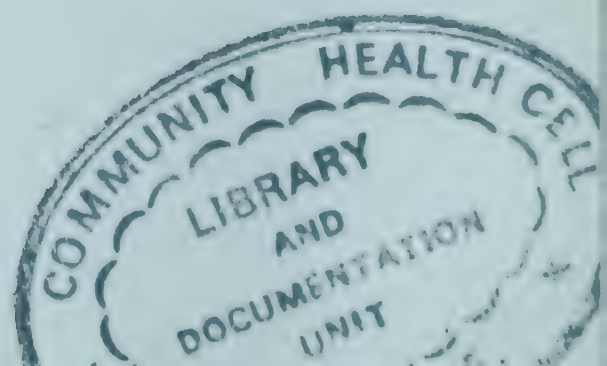
One other reason: the iron tablets were perceived as heating, and since milk (which is cooling) is not available to counter-act it, the tablets are not taken. Also, iron tablets are associated with contraceptives, since the strip of oral pills contains twenty-one contraceptives and seven iron tablets.

Interestingly enough, when a doctor in town prescribed iron tablets, the women consumed them. Primarily because they paid for them. When bought at the chemist's the tablets were attractively packed. The iron tablets given by the nurse were given by hand, in the past, and gave off colour in the rainy season and warm weather. Also the doctor had, and continues to have, a much higher social status than the local nurse. Even so, it was more common to buy only half of what was prescribed.

#### *Compliance with food supplementation*

A majority of the women stated that they were not selected to receive food from the *anganwadis*.

Of the 29 women selected, a few did not go because it was an open admission of their poverty. Usually, the children attending the *anganwadis* would bring the *tiffin* home. Even so, only seven out of the twenty-nine women ate the *tiffin* without any reservations. Others used it as a substitute rather than as a supplement (if they ate the *tiffin*, they skipped another meal). Another complaint was that the *tiffin* was cold when it reached home, and therefore not tasty. This caused more problems after delivery when all food eaten is expected to be hot.



### *Anaemia*

According to UNICEF standards, about 62 per cent women in the study were anaemic and 18.5 per cent severely so.

### *Breastfeeding*

Almost 55 per cent women (whose previous children were alive) stated that they did not breastfeed the older sibling when they were pregnant, mainly because the child was believed to become affected by stomach pain. Another 37.5 per cent stated that they continued to breastfeed until six months into pregnancy. About nine per cent continued to breastfeed until the last month of pregnancy, as there were some who continued to feed the older sibling even after delivery, thus breastfeeding two children at the same time.

## *CASE STUDY*

Y. discovered she was pregnant when her youngest child, a boy, was only three months old. During her pregnancy, she continued breastfeeding the child. She felt he was too small to be weaned. After nine months, she gave birth to a very small girl. Her weight was only 1,850 grammes and everyone expected her to live a short life. When Y. saw that the girl was very weak, she gave preference to the first child and offered most breastmilk to him. The girl managed to survive for some months, but finally died.

One wondered whether the same would have happened if the first child was a girl and the second a boy.

### *Going to mother's place for delivery*

Though only women having their first child are, by custom, supposed to return to their parental home for their delivery, this was not found to be entirely true in the study group. While 40 out of 42 zero parity women left for their mother's home for their first



deliveries (the other two did not do so because one had a stillbirth before she could leave, and the other lived with her husband at her own parents' home), a good 72 per cent of first and second parity women, and 50 per cent of third and fourth parity women also had their deliveries at their mothers' houses. This practice is common among all castes and religions.

This custom allows the pregnant and newly-delivered women more rest, more care, more freedom and often, better food, where the woman can demand or prepare whatever she craves for from her blood relatives.

### *CASE STUDY*

L. was pregnant with her fourth child. She gave birth to the other three children at her parents' place and she wanted to deliver there again. However, there was an argument between her parents and her husband's family, the central issue being 'who will pay the costs of delivery for this fourth child?' L. was certainly welcome in her parents' house, but only if her husband agreed to pay all extra costs included. As he ultimately did.

#### *Daily physical activities during pregnancy*

Spending of energy is determined by daily physical activity and this is an important factor which varies from woman to woman. At her mother's place a woman can take more rest, while at her husband's place she usually has to work very hard.

We classified women according to the type of activity conducted, whether sedentary, moderate or heavy, and the duration (months of pregnancy).

In the study population 26.8 per cent women were engaged in housekeeping only throughout pregnancy, while 2.7 per cent

were engaged in an economic activity at home (such as broom and mat making, tailoring work, keeping shop) and an equal percentage went to the fields, but stopped working before four months of pregnancy.

A majority, i.e. 64.9 per cent, however, worked outside the house for a longer period of pregnancy, conducting agricultural work in the field, either cultivating their own field or working as wage labourer. Only three women had jobs as a teacher or research assistant. Four women were engaged in heavy work such as daily work in the stone quarries or the building industry.

Most of the women engaged in activities outside the home (about 91 per cent), worked longer than six months of pregnancy, and 30.4 per cent worked to the last month.

To get an idea of the activities conducted on a normal day, several women were followed and their activities observed during one day. Four of these case studies, all dealing with different economic activities, are presented in appendix A.

In the first case study, the activities of a woman, living in the middle socio-economic class (as per the researcher's classification, see for more details dissertation), who kept house only, during her whole pregnancy, are described. The case study gives a good idea of all types of activities carried out in keeping house, caring for children, and preparing food.

The second case study illustrates the work conducted by a woman of the Korama, a caste group engaged in making mats and brooms. This woman is from the socio-economic lower-middle class. The case study shows how housekeeping and economic work are combined. In both case studies, women lived in a joint family, and part of the housekeeping is conducted by other female members as well.



The third case illustrates how a woman living in a nuclear family (middle socio-economic class) combines her housekeeping with cultivation of the land owned by her family.

And, the last case study deals with working activities of one of the poorer women (lowest socio-economic class) in the study population. She lived in Mandihal and went to work in the stone quarry nearby every morning.

Besides information regarding the type of activities conducted, the four case studies also give an impression of the daily food and meal patterns and of certain foodstuffs and eatables consumed.

## Chapter 5 Food intake during pregnancy, the health condition of women, and well-being of the children in the first month of life

For most villagers, the daily food pattern is monotonous, consisting of the same meal pattern and the same food items. Of course, there is seasonal variation in availability of vegetables or fruit. Also, on festivals and new or full moon days special food like sweet wheat preparations (*shawige* and *shira*) are consumed. But in general, especially among the lower socio-economic groups, variation is limited. The daily meal pattern is as follows.

### Food pattern

Early in the morning, people drink tea with sugar. Milk is added if available and affordable. The poor man's tea is black tea. But, even if buffaloes or cows are present in the household, most milk is sold to the milk cooperative, leaving only a small quantity for use in the household.

Breakfast, eaten later in the morning, consists of a snack (*tiffin*). *Upma* (*uppittu*), made of *rava* (wheat coarse) fried with onions, fresh chillies, garlic, and other spices is one of the most common *tiffins*. Others are *churmari* (puffed rice) or *avalakki* (beaten rice flakes) prepared with the same ingredients. Not everyone, however, eats a *tiffin* every morning: it depends strongly on the economic status of the household. In the nutritional survey it became clear that most women take a *tiffin* in the morning only once in three days. On the other two days, breakfast consists of a part of the afternoon meal: some *rotti* and vegetables.



In the afternoon, usually around one or two o'clock, a meal (*oota*) is consumed. This starts with *rotti* and curries made from vegetable or pulses. *Rotti* is a kind of pancake made of jowar (*joola*: sorghum) flour and water. *Chapati*, the pancake made of wheat (which is more expensive) is eaten by only a few people belonging to the higher socio-economic classes.

Vegetable curry (*bhaji*) consists of vegetables baked in oil with onions, garlic, fresh chillies, and other spices. The most commonly eaten vegetable, available almost throughout the year, is brinjal. Some other vegetables eaten in the villages are potato, ladies finger, ridgegourd, beans, leafy vegetables like fenugreek or amaranth, pumpkin, cucumber, or bell-pepper. Most vegetables are grown in the fields, very rarely in the kitchen garden at the back of the house. Most vegetables are grown and consumed in the period during and after the rainy season.

In addition to season, physical and economic accessibility determine the consumption of vegetables. For example, vegetables are abundant in the village of Mavinkoppa, where they are grown in the area near the tank at walking distance from the village. In the more remote cluster of villages, however, most inhabitants are dependent on the weekly market day in Dharwad and eat fresh vegetables only three days a week. In the same way, people from the poorer sections, owning no land, simply do not have the money to buy vegetables every day. If vegetables are not available, more pulses like thurdal (*togaare beele*) or green gram (*hesaru beele*) are eaten.

After *rotti* and vegetables, the meal continues with rice with curry commonly made of thurdal. If milk is available it is added to the rice. Hot pickles (*uppinkai*), home-made from raw mango (*mavinkai*) are also served. Sometimes, especially in the hot summer season, curds (*mosaru*) or buttermilk (*majjige*) accompany the meal. Along with the food (which is eaten only with

the right hand) water is taken. It is literally poured into the mouth, without the lips touching the cup. The meals are concluded with a *pan* made of betelleaves (*yeele*) with areca nut and lime (*sunna*). This is said to help digestion.

Late in the afternoon, again tea is taken. Very rarely, only on special occasions, is *tiffin* eaten in the evening time. Finally, at night around nine to ten o'clock the last daily meal, also consisting of rotti and rice and *bhaji*, is eaten.

Almost one third of the study group was vegetarian. But, even among the non-vegetarians, actual consumption of chicken, fish, or mutton was limited because it is quite expensive. Eggs were consumed more often. Consumption of fruit too was low, because even if it was brought home, the women tended to eat very little of it, leaving the husband and children to consume most of it.

Women tend to get less food because men get first preference and eat first, children next and, finally, the women. There was a household of 28 people, where eggs were rarely left over for the women after the men ate ... at most, once a week. Another woman told us very matter-of-factly that while her husband ate an egg a week "because he needs more food", she ate one egg only throughout her whole pregnancy. She lived in a family of four.

In addition, since very few women do the marketing themselves, mostly it is the men such as the husband, father-in-law or brother-in-law who do the purchasing, or, in some cases, the mother-in-law .... the women are at a disadvantage. They cannot ask for items of their choice.

### **Actual food intake**

The actual, average, daily intake during pregnancy, in general, amounts to 1,700 kcal. The recommended daily energy



intake for women in India weighing 50 kg, and conducting moderate work, amounts to 2,225 kcal per day, plus 300 kcal extra during the last two trimesters of pregnancy.

However, very few women weigh the recommended 50 kg. The average pre-pregnancy weight is 41 kg. The recommendations for non-pregnant women in India weighing 35, 40, 45 kg (in the age group of 18 to 30 years) is 1,824, 1,957 and 2,090 kcal respectively.

It is evident that women in the study population do not achieve the recommended daily energy intake, not even that of non-pregnant women .... in fact only 30 per cent reach the 1,800 kcal level.

As for other nutrients such as protein, calcium and iron: apparently only 25 per cent of women do not reach the normal protein targets. The ICMR recommends one gramme of protein per kilo of body weight per day, plus 15 grammes extra during pregnancy. About 74 per cent women achieved the recommended normal level, probably because of the daily consumption of dal and gram. And, 11.4 per cent consumed even that extra 15 grammes.

The recommended intake of calcium for pregnant women is 1,000 grammes per day, which only a very few women reach, the average being 288 mg. The same goes for iron, only four per cent of the women achieving the recommended 38 mg per day ... most consume only an average of 24.7 mg daily.

### **Drop in energy intake**

There is a small decline in daily energy intake from month three / four to month five / six / seven of pregnancy. The biggest change, however, takes place between month five / six / seven and month eight / nine of pregnancy.

This decline does not seem to be related to the season. Also, women who belong to the lowest socio-economic class seem to be less inclined to reduce their daily energy intake than those of the higher classes. More important, although the number of respondents was small, the analysis indicates that women who are better nourished, and whose last birth interval is shorter, are more likely to reduce energy intake at the end of pregnancy.

Energy intake between well-nourished and malnourished women is quite marked in that the latter are less likely to reduce energy intake while the former do so predominantly. Women in the undernourished group (BMI 18.4) hardly change daily energy intake and remain at a level of around 1,660 kcal. The well-nourished women (BMI 18.5) however, show a decline in daily energy intake from a level of more than 1,800 kcal to 1,630 kcal at the end of pregnancy: an average reduction of 170 kcal. The average daily energy intake in the last two months of pregnancy thus hardly differs between the two groups of CED.

### **Maternal weight gain**

Weight gain throughout pregnancy could be estimated for only 84 women. Of these, the average weight gain was 6.4 kg.

Interestingly, women in the well-nourished group gained an average of 5.2 kg, while women in the under-nourished group gained an average of 7.2 kg. Severely under-nourished women gained 8.2 kg, while those in the moderate and mild categories gained 6.8 and 6.9 kg respectively, on an average.

Another relevant factor is physical activity: women who kept house or who worked at home gained a little more weight than women who worked outside.



## Energy intake and maternal weight gain

We found no relationship between change in energy intake and total weight gain during pregnancy. This answers our question ..does reduction of food intake during pregnancy affect health conditions of the women?

## Pregnancy outcome

The average birth weight of all the children born alive in the project was 2,646 grammes. About 26 per cent of the children were of low birth weight (i.e. less than 2,500 grammes). The average length of the children at the time of delivery was 47.2 cm, while the average head circumference was 33.6 cm.

About 18 per cent of the infants were born prematurely (before 37 weeks of gestation) and showed a significant lower average birth weight of 2,411 grammes. Those born after 37 weeks of gestation weighed 2,700 grammes.

The average birth weight of girls (2,614 grammes) was lower than that of boys (2,682 grammes), while the Low Birth Weight percentage was 29.5 for girls and 23.3 per cent for boys.

Also primiparae (first borns) weigh, on an average, less than infants who have younger siblings: 2,437 grammes as against 2,696 grammes.

Women with anaemia (here defined as a Hb level below 11 gr/dl) showed a lower average birth weight (2,593 grammes) than those with higher Hb level (2,748 grammes). However, the differences are not significant. The percentage of Low Birth Weight children in the first group is 27.3 per cent and, in the second group, 22 per cent.

## **Energy intake and birth weight of children**

No differences were observed between birth weight of infants whose mothers had either reduced or increased energy intake at the end of pregnancy. Similarly, no such difference was observed between infants of mothers who were either well-nourished or under-nourished before pregnancy. This answers the research question whether reduction of food intake among women who are malnourished before they became pregnant affect the birth weight of the child.

## **Development of children in the first month of life**

Several studies show that children in developing countries are able to gain weight more than children in industrialized countries, especially in the first month of life.

This was borne out by this study too. The growth velocity (grammes weight gain per kg body weight per day) in the first month of life among these children amounts to 10.3. Comparative figures for other countries, made in another study, are 6.1 in the United Kingdom, 7.8 in the USA, 9.1 in Singapore, 10.4 in Nigeria, and 10.5 in Tanzania. Children in this study group experienced a growth velocity similar to children in Tanzania and Nigeria.

In addition, growth velocity of premature infants was higher, 11.5, than among mature infants at 10.1.

Thus, infants in this study registered a higher growth velocity in the first month of life, as compared to infants in industrialized countries. This answers our research question whether Indian infants grew faster than the children in industrialized countries.



## Chapter 6 Beliefs about quality of food intake during pregnancy

In the former chapter, we found a trend of decreasing energy intake at the end of pregnancy. However, not all respondents appeared to reduce their energy intake. The data indicated that women who were well-nourished before pregnancy and women who showed a shorter last birth interval are more likely to eat less. In this chapter, we focus on the perceptions of the women themselves about the quality of their food intake during pregnancy.

The beliefs of other important people who influence the pregnant women and the willingness of these women to conform to them are considered too.

The information presented in this chapter is based on the interviews conducted with 158 women, and the in-depth interviews conducted with 32 of them.

Beliefs concerning the quality of food intake can be divided into two categories: those regarding food to be avoided and those regarding food to be added or eaten extra during pregnancy.

### Food to be avoided

The following items are mentioned by the respondents as food to be avoided during pregnancy: papaya (mentioned by 72.2 per cent of the respondents), fresh coconut (*hasi cobri*: 65.2 per cent), banana (45.6 per cent), (white) sesame (36.7 per cent), sweet potato (31.6 per cent), peanut (17.7 per cent), pumpkin (15.8 per cent), and jackfruit (10.2 per cent). Other food items reported by less than 10 per cent of the respondents are *ginna* (colostrum of the cow or buffalo from which a special sweet is made), fresh green chillies, watermelon, *kekkerhannu* (musk-melon), and non-vegetarian food (meat, fish, and eggs).

Although the kind of food items to be avoided were generally agreed on, the perceived consequences of consumption were more diverse. Some food items were believed to have one effect only. For example, all respondents related banana and fresh coconut to illnesses of the child after delivery. Perceived consequences of other food items, however, varied. For example, 33.6 per cent of the respondents classified papaya as heating and to be avoided because it would induce a spontaneous abortion. Others (32.7 per cent) however categorized the fruit together with food items like banana and fresh coconut, as having an adverse effect on the health of the child. And another small group classified papaya together with other heating food like sweet potato, peanut, jackfruit, pumpkin, *ginna*, fresh chillies, and *kekkerhannu* and believed it would cause either rashes and birthmarks on the skin of the child or swelling in the body of the mother. All these different perceived consequences, as mentioned in this example of papaya, are worked out in this section.

Table 6.1. Food items to be avoided during pregnancy\*

Food items to be avoided during pregnancy	Mentioned by % of women
Papaya	72.2%
Fresh coconut ( <i>hasi cobri</i> )	65.2%
Banana	45.6%
(White) sesame	36.7%
Sweet potato	31.6%
Peanut	17.7%
Pumpkin	15.8%
Jackfruit	10.2%
Sweet made of colostrum of cow or buffalo ( <i>ginna</i> )	5.0%
Fresh green chillies	3.8%
Watermelon	3.2%
Musk melon ( <i>kekkerhannu</i> )	3.8%
Meat, fish, or eggs	1.3%

\* Total number of women = 158.



*Heating.* Most respondents claimed to avoid papaya during pregnancy. Some specified it further and avoided it especially during the first months of pregnancy. The main reason not to eat papaya was that its heating qualities (*ushna* in Hindi, *kaavu* in Kannada) might induce a spontaneous abortion. The concept of heating is related to the medical system Ayurveda where food and other items are classified according to their effects on the human body. The dichotomy heating and cooling is only one of the attributes of food. In general, pregnancy is believed to be a process of increasing heat (*jvara*). The child is growing, activity takes place, implying that heat is created. This heat is considered normal during pregnancy, not only by laypersons but also by medical professionals as the following case study of B. illustrates<sup>1)</sup>.

### CASE STUDY

- T : “she is saying, her problem is: her body is burning  
I : what is burning?  
C : like *khara* (chilli) it is burning  
T : burning means: like chillipowder attached to the body, like that, it is burning like that  
I : where is it burning, in her stomach?  
C : stomach, inside the stomach and legs; from stomach to bottom: a burning sensation. Like chillipowder  
I : did she go to a doctor?  
T : she went to the doctor, but the doctor said: so, now you are completing nine months of pregnancy, it is like that, it is normal”

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1) In all case studies presented the following abbreviations are used:

T = translator / interpreter

I = interviewer

C (or any other letter in the following case studies)  
= the respondent.

Increasing heat is considered normal during pregnancy, however too much heat is considered to have adverse effects. Depending on the amount and the kind of heat created, the following effects are known. First of all, spontaneous abortions can occur. In addition, too much heat might also result in health problems for the mother: besides a burning sensation in the body, as mentioned above, other symptoms include a burning sensation with urination, burning eyes, cracks in the feet, and swelling of hands and legs. Furthermore, too much heat might have minor effects on the health of the child after delivery: rashes, pimples, birthmarks, and other skin diseases can result. These different perceived consequences of too much heat during pregnancy are discussed next.

*Heating and leading to a spontaneous abortion.*  
Termination of pregnancy was believed to occur if too much heat was created. As the mother of one of the respondents said:

“.. if there is (too much) *kaavu*, there will be no development of the child”.

Too much heat can be created by either food, season (summertime), body constitution or other circumstances. One of the food items creating heat, i.e. papaya, has already been mentioned. Traditional birth attendants were reported to use this fruit also in order to induce an abortion.

A few respondents believed other food classified as heating (like sweet potato, sesame, and pumpkin) to cause a spontaneous abortion too.

Too much heat can also be created by having sexual intercourse during pregnancy. And, as a research assistant explained, even more heat is created during sexual intercourse if men have bad habits like smoking and drinking alcohol (which is



considered to be extremely heating). In general, it was believed that sexual intercourse should stop after four or five months of pregnancy. In the following case study, this effect of sexual intercourse is illustrated while another item creating too much heat, i.e. allopathic medicines is also mentioned.

### *CASE STUDY*

K., who participated in our research project, had a spontaneous abortion after a gestation period of six months. When the local nurse came to see her and asked what had happened, she confided that she and her husband had had sexual intercourse the night before. It must have created too much heat, the spontaneous abortion being the consequence.

When we visit K. a day later, she does not want to convey this private information to us and she tells us another story. She had taken some tablets for a headache the day before her spontaneous abortion took place. These tablets created too much heat, inducing the miscarriage.

Besides tablets also injections, for example the tetanus injections provided during pregnancy, were believed to create too much heat. When we conducted the feasibility study in 1989, this effect was mentioned by respondents as the reason they refused these injections. Furthermore, hard work or carrying heavy things can create too much heat:

### *CASE STUDY*

N. was pregnant and lost her child in the seventh month of pregnancy: it was a stillbirth. When asked about factors responsible for this stillbirth, she shrugged her shoulders and said:

“only God knows, it is He who decides”.

Her husband, however, explained later that she performed too much heavy work: just three or four days earlier to the stillbirth she carried 35 kg. of cotton from the fields to her home. This must have caused the expulsion, he believed.

Heat is created by work, and if it is conducted in summertime and especially in the hot months of April and May, even more heat is produced. Too much heat can be neutralized by taking food items which have a cooling quality (*tampu*), as the following case study illustrates.

### *CASE STUDY*

M. tells us that she eats more curds and buttermilk during pregnancy because it is cooling. She is pregnant, she works in the fields, and it is summertime. Therefore too much heat is created and she needs more cooling food. When we asked whether she would have drunk more buttermilk and curds if she was pregnant in wintertime, she answered that if she had to work in the fields in the winter, then certainly she would have eaten more cooling things.

In summertime, many women in the last trimester of pregnancy reported to eat more cooling food items like curds and buttermilk. Women who have experienced many spontaneous abortions, stillbirths, or severely malformed children were believed to have a heating body constitution.

### *CASE STUDY*

P. is pregnant for the fifth time. Her first pregnancy ended in a spontaneous abortion. The second and third pregnancy resulted in live births, but both children had severe malformations and died almost immediately after delivery. With the fourth pregnancy she had more luck: a healthy girl was born. P. mentions that she must be having a heating body constitution, because so many spontaneous abortions and 'wrong' children were born. During the



current fifth pregnancy she drinks more buttermilk and curds in order to cool down her body.

Unfortunately however, this pregnancy also ended in a stillbirth. Women like P. who experienced many spontaneous abortions and children with malformations often took a special herbal medicine with cooling qualities to counterbalance the heat. The concoction is called *beevin rasa* and is juice made of neem leaves with water. It is taken every morning.

### CASE STUDY

C. is pregnant for the fifth time. She has already lost three children: all three died within one month after delivery. They had severe malformations: one had hydrocephalus, another had spina bifida (*hunnu*). She tells us that there was too much *kaavu* for her during those pregnancies. During this pregnancy, a neighbour told her to drink *beevin rasa*, because it is *tampu* and cools down. She took this *beevin rasa* daily. In this case, the traditional medicine did work: C. gave birth to a very healthy child.

Although a spontaneous abortion being the ultimate consequence of too much heat, other effects are known. These are described in the following section.

*Heating and effects on the health of pregnant woman.* Eleven women in the sample told us they avoid food items like papaya, sweet potato, jackfruit, pumpkin, *ginna* or *kekkerhannu* because it would negatively influence their own health. If they eat these heating food items, there would be *baavu*: swelling and pain of the hands, legs or face of the woman. This food was also said to be *barsna*, which can be translated as an adverse effect, an allergy. This concept is explained in more detail on the next page.

Other factors determine whether these symptoms of too much heat in the woman's body occur: pregnancy itself does not necessarily evoke it.

## CASE STUDY

During pregnancy, S. avoids pumpkin, sweet potato, fresh green chillies, and papaya because, as she says, they are heating (*kaavu*). This is the first time she does not eat them when pregnant. In earlier pregnancies she ate all these food items. When she became pregnant this time, she sprained her ankle, leading to a swelling on her foot. She went to a traditional healer in a village some thirty kilometres away and brought the five items needed to perform the *puja*: a coconut, arecanut, and betel leaf, incense sticks, and five rupees. The traditional healer treated her by placing a copper ring in S.'s ear and told her to avoid the food items mentioned above for five months.

*Heating and leading to rashes or birthmarks on skin of the child.* The same heating food items (papaya, sweet potato, jackfruit, peanut, sesame, pumpkin) were said to lead to rashes, pimples or birthmarks on the skin of the child after delivery.

## CASE STUDY

L. does not eat papaya during her pregnancy, because it is extremely heating (*bahale kaavu agatai*). If she ate it, a kind of burn (i.e. a birthmark) on the skin of the child, called *suttu* (a burn) or *suttid kale* (a mark of a burn) will result.

Besides birth marks, also pimples and other skin rashes on the skin of the child (after delivery), are known to be the result of the consumption of heating foods during pregnancy. Women mentioned avoiding jackfruit as it would lead to *charma* (pimples) on the skin of the child. Other women mentioned they avoid fresh green chillies or *kharpuddi* (chillie powder) because it would induce *mensin bakki*, a kind of prickly heat on the skin of the child. Again, the heating effect is more strong during summertime.

More often, however, women did not especially avoid this heating food during pregnancy. The effect on skin of the child was



commented on only after delivery. An example: a woman showed her new born child and pointed at a big brown birthmark on the belly of the baby and said:

“I must have eaten too much jackfruit during pregnancy”.

From this last paragraph, it becomes clear that women believe that what they eat during pregnancy not only affects health of the fetus and their own health, but also influences the well-being of their children after delivery. In the next section, more examples of food items having an influence on health of the child after delivery are given.

*Barsna and leading to illness of the child.* As mentioned above, there is a high consistency in beliefs about what kind of food should be avoided during pregnancy, though less agreement exists on the perceived consequences of consumption of this food. However, much agreement existed on the effects of banana and fresh coconut eaten during pregnancy. Banana (mentioned as avoided by 45.6 per cent of the respondents) and fresh coconut (mentioned as avoided by 65.2 per cent) are both *barsna*.

*Barsna* can be translated as an adverse reaction of the body, an allergy. Food is *barsna* during a specific period. During pregnancy, banana and fresh coconut are *barsna* for the child because they have an adverse effect on the body constitution of the child in the stomach, ultimately leading to illnesses after delivery. In the period of lactation, other food items are considered to be *barsna*.

All women associated banana and fresh coconut with illnesses of the child after birth. If they eat these food items, there would be too much *kapha* in the body of the child which leads to illnesses (after delivery) like colds, or coughs, and an illness called *hotte andu* (in one village also called *hottin bene* or *hotte rooka*).

The symptoms of the illness are as follows: too much *kapha*, colds, and coughs (*kemmu*), raising of the belly under the ribs (*pakkadi*), breathlessness, fever, and fits. Ultimately it was believed to lead to death. A local doctor identified the illness as pneumonia. Also sesame and peanut were predominantly associated with colds, coughs, and *hotte andu*.

Banana and fresh coconut were commonly classified as *tampu*: they have a cooling effect on the body of the foetus (not on the body of the pregnant woman). If eaten, the child's body constitution is influenced: *kapha* (one of the *tridosha* in the human body according to Ayurveda) dominates in the body and provokes the above-mentioned post-natal illnesses. Moreover, the oil contents of sesame and peanut, and also of fresh coconut, increases *kapha* in the body.

The illness *hotte andu*, evoked by food intake during pregnancy, can occur during the whole period of childhood. As stated in the Ayurveda, in each period of life one of the three *dosha* (*pitta*, *kapha*, *vata*) predominates. In childhood, *kapha* dominates and a surplus of this *dosha* in the body leads to illnesses like coughs, colds, and pneumonia. According to some respondents *hotte andu* can occur even up to the age of 12. But again, other circumstances evoking the *kapha* disease are important.

### CASE STUDY

B. tells us that her child developed *hotte andu* when it was nine months old. Indeed, she had eaten banana during pregnancy. But the child developed the disease under cold circumstances: the weather was quite cold and she had given it a cold bath. No wonder that the child, under these circumstances developed *hotte andu*.

During the interviews we were struck by a dilemma facing the mothers-to-be: in order to prevent too much *kaavu* during pregnancy (see above) they should eat more cooling things. But



here, cooling food items have to be avoided because they are supposed to evoke colds and coughs, and *hotte andu* for the child. Discussing this with my assistants, they told me there are different kinds of cooling qualities. As seen before, in the section on Ayurveda, heating and cooling are attributes of food. But there are also six tastes: sweet, salty, sour, pungent, bitter, and astringent. When food is consumed, the first reaction of the body is taste. The next reaction of the body happens when food is swallowed and comes into the stomach: here the attributes, like heating and cooling, play a role. In this way, buttermilk and curds are different from banana. All three have a cooling effect in the stomach, but the taste differs. The assistants, for example, classify banana as sweet and cooling. However besides the cooling quality, especially the oil contents of food are believed to have an effect and to increase *kapha* in the body.

### **Extra food and likings**

Although many ideas and rules exist about what kind of food should be avoided during pregnancy, very few existed regarding what food should be added in this period. As mentioned above, some women drank some extra buttermilk and curds in order to reduce heat.

A small number of women mentioned they ate more vegetables during pregnancy, but not for any special health reason: just because they liked them. In addition, eighteen women, 11.4 per cent, reported consumption of more green vegetables during pregnancy. Here, too, the main reason mentioned is that they liked them more. Very few of them, only four, associated this with improvement of health of either mother or child. Some said that by eating green vegetables the secretion of breastmilk increases. Given the fact that 36.6 per cent of all multiparae women breastfeed their previous child during pregnancy, it becomes clear that women consume more green vegetables not because of pregnancy but

because of the milk lactation for the youngest child. Most women did not add anything extra or eat any special food during pregnancy and said:

“we just eat all things, except the food we have to avoid”.

Several women mentioned that they just eat what they like and, of course, what was available in the household. This economic factor, availability of food in the household is one of the constraints on eating extra food. Others are distribution of food within the family and the dependency of women on others for provision of food items. Many respondents said they would like to drink more milk, curds, or buttermilk during pregnancy, but there was either no cow or buffalo in the household or no money to buy it. The same can be said of fruit, to be bought at the marketplace. One of the respondents, when asked whether she liked to eating anything special during pregnancy, answered:

“what should I like? Even if I like something, how can I get it?? How can I buy it?? There is no money in the house”.

But even if economic circumstances were more favourable, pregnant women ate whatever the family ate. In an interview with one of the women in her mother's place, the respondent told us about her nutritional behaviour in her husband's place:

“... there I eat just what everyone else in the house eats”.

On inquiring whether she ate anything special during her pregnancy, her mother reacted:

“What do we have to eat special??? She is living in her husband's house: so, what extra can she eat?? Even if she wants something special, the husbands family has to give it to her”.

As we saw earlier, many women remarked that at their mother's place they eat better food than with their husband.



Some beliefs prevail about food having a special effect on the child. In a society where a light coloured skin is highly valued, several food items are known to lead to such a fair complexion. These food items are either badaami wheat (to be bought in a package from the market and mixed with milk), or saffron mixed with milk or cumin (*jiirge*) with aniseed (*badesoppu*). Another custom mentioned by respondents is pica and geophagia, i.e. the consumption of items like mud (*mannu*), charcoal (*iddali*), sacred ash (*vibhuti* and chalk (*matti*) during pregnancy.

Special likings (*baike*), consumed by women during pregnancy, consisted of sour things like raw mango (*mavinkai*), pickles (*uppinkai*), raw fruits (*kai*), cucumber (*sautekai*). Also vegetables and fruits like sweet lime (*mosambi*), grapes (*draxi*), and apple (*seebu hannu*) were mentioned.

### **Social norm regarding quality of food intake**

Given the beliefs of the respondents, attitudes are furthermore constituted by the subjective norm: the beliefs of important others and motivation of women to conform to them. With regard to beliefs on quality of food intake during pregnancy (in contrast with quantity of food intake), the beliefs of others play an important role. When respondents were asked who had told them to avoid certain food or to eat something extra (more than one answer was possible), 43.7 per cent mentioned their mother-in-law, while 44.3 per cent mentioned their own mother. Others consisted of the neighbours or village people (mentioned by 26.6 per cent), elders in the family (mentioned by 12.0 per cent), and other female members of the family (10.8 per cent). 14.6 per cent even reported the husband or father-in-law. A mere three mentioned a medical doctor or nurse.

The group of important others consisting of village people and neighbours indicate that beliefs about what should be avoided

during pregnancy is common knowledge. And not necessarily a belief incorporated by the respondents themselves. This is illustrated by sentences very commonly used in the interviews:

A : “when you are pregnant, **as they say**, one should not eat banana, fresh coconut, sesame, ....

T : what about papaya?

A : I did not eat: all is *barsna*, **as they say**”.

The mother of one of our respondents, present during the interview, explained that her daughter should not eat banana and all other food mentioned, and added:

“this is what our ancestors did, we are just continuing it”.

As expected, the mother-in-law was one of the important others. But a respondent's own mother also played a major part: women were influenced by their mothers during the first pregnancies when they came home for delivery. One of the related factors is the type of family a woman lives in. The difference is illustrated in the following case study.

### CASE STUDY

While interviewing a group of women in the Harijan street in Mugad, two women mention all the food items they avoid during pregnancy. Two others tell us they just ate everything. Asked about the difference, one of the women who does not avoid anything says:

“... well they are living with the elders and have to obey them. But, me ... I am only living with my husband and can eat what I want. No one told me not to eat!!”

She explains further that during her first pregnancy she, too, did not eat banana and papaya. At that time, her mother-in-law was still alive and told her not to eat these food items. When her mother-in-law died and she became pregnant for the second time, she ate everything.



Among women living in a joint family, the majority (40.2 per cent) mentioned first of all being influenced by their mother-in-law (while still 29.2 per cent mentioned their own mother). Among women living in a nuclear family, more said they were influenced by either their own mother (24.4 per cent) or neighbours (20 per cent). Also the husband played a more important role: of all women who mentioned their husband, 63.2 per cent live in a nuclear family. Still, 11 per cent were influenced by their mother-in-law. And although some could be influenced by her because she lived nearby in the same village, even in the same street, most of these women were influenced by their mother-in-law during an earlier pregnancy when they lived with their parents-in-law. Due to the death of the parents-in-law or a separation, they now lived in a nuclear family.

Here, we come to another background variable: parity. Most influence took place during the first pregnancy. Many women who were pregnant for the first time appeared to know what kind of food they should avoid but did not know why. They were just told to avoid these items.

### *CASE STUDY*

N: "this is my first pregnancy, my mother and mother-in-law told me not to eat banana, coconut, .... I do not know why".

In another such interview, we asked another woman about her food intake during pregnancy and her mother answered:

### *CASE STUDY*

Mother: "... what does she know about pregnancy? It's her first one. She has no experience".

Of course, there is a relationship between the two background variables type of family and parity. After marriage, women start to live with their family-in-law and most zero parity women (92.9 per cent) live in a joint family.

While the mother-in-law and mother were the most important persons influencing the respondent with regard to quality of food intake during pregnancy, motivation to conform to either or both of them differed. Obviously, women in joint families are more motivated to conform to their mother-in-law, where they live and spend most time of their pregnancy.

### *CASE STUDY*

When we interviewed S. in her mother's place, she told us that during pregnancy she ate everything in her husband's place. Her mother, present at the interview, mentioned that she should not eat papaya and banana, etcetera. To our question

“but S. did take these food items during pregnancy, is it not?”

S. reacted:

“I am living in that place (husbands), not here!!”

The influence of the background variable parity can be illustrated nicely by another case study.

### *CASE STUDY*

When we went to conduct an in-depth interview in Mugad, not only our respondent (S.) appeared to be present in the house, but also her mother-in-law (A.) and the latter's daughter (K.) who is pregnant in her last month and had come home for delivery. Our respondent S. (23 years old) told us that she eats everything during pregnancy, except papaya which is not available in this period.

The daughter K., living in another village with her in-laws told us that she avoided banana, fresh coconut, and sweet potato. Her mother-in-law and husband had told her to avoid them. Her mother A. agreed that K. should avoid them during pregnancy.



We wonder about this difference: A. tells her own daughter she should avoid certain things, but her daughter-in-law who lives with her, does not avoid them. On asking what the difference is between the two women S. first tells us:

S: "I am more free, I have independence in the house, and there are no guidelines given by elders".

And her *atte* adds:

A: "... she (S.) already has three children".

It is clear that women who are pregnant for the first time and who live with their parents-in-law conform to the ideas of that family, especially those of the mother-in-law. After the marriage is consummated a woman has to prove her fertility by becoming pregnant, the sooner the better. Her status is reinforced by giving birth to a child and certainly during pregnancy she tries to prevent a spontaneous abortion. In addition, she takes care to prevent any future illnesses for the child, or she might be blamed for it later on. Therefore, she is definitely more obedient and does things her mother-in-law tells her to do (or at least pretends to do, as we will see later) than higher parity women. Women of higher parity, and certainly S. who has already given birth to two boys, are more free and are less dependent than women of first parity.

## Summary

The information gathered indicates that for pregnant women, first of all it is important to prevent a spontaneous abortion, stillbirth or malformation by avoiding too much heat. Too much heat can be created by either food, summer season, hard work, allopathic medicines or sexual intercourse. Furthermore, the body constitution of the child is influenced by nutritional behaviour of the mother. If she eats too much banana, fresh coconut, or

sesame, it results in too much *kapha* in the body of the child, inducing illnesses like pneumonia, cold, and cough after delivery. Moreover, it is clear that pregnancy is seen as a period in which some food should be avoided, but not so much as a period in which food should be added. Later we will see that the period after delivery is seen as a period in which a woman needs extra food. In addition, we found that most women are either influenced by their mother-in-law or mother, especially during their first pregnancy.

One can wonder whether women with an intention to avoid papaya actually do so, given the fact that papaya is available only during some months of the year. Moreover, it is not affordable for many people. In the same way, few women said they avoid non-vegetarian food at the end of pregnancy, but in the villages not much meat is eaten anyway, because it is too expensive. Also, *ginna* -the sweet made of the colostrum of cows or buffaloes- will not often be present in a household. But it might be eaten more often than expected, because it is a delicacy to be shared with other people.

On the other hand, people might have an intention to avoid banana because it results in illnesses for the child. But it is one of the few fruits available and affordable, and women might eat it more often than expected based on the reported beliefs. For in the research project with different surveys it was possible to find almost all women in the nutritional survey stating they avoided banana during pregnancy, where as from the interviews it became clear that more than 50 per cent actually ate it. The opposite was also noticed. In the interviews some women told us they avoided banana, while in the nutritional survey, they were observed to eat banana. Thus, avoidance of a certain food item not always means a total avoidance. Several respondents made clear that a little bit of banana does not have a bad effect on the health of the child, but too much certainly would.



The same problem, knowing whether women indeed really do what they say they do or should do, applies to the influence of important others. In a social context where showing respect to elders is very important it is difficult to obtain accurate information about whether women really do as they say and conform to their mother-in-law or others. Two case studies illustrate how individuals in this kind of social context find their own way.

### *CASE STUDY*

The case study pertains to an interview with L. The interview was conducted in her parent's house. She said that her mother-in-law told her to avoid banana, etcetera during pregnancy. But well, actually she ate them. She tells us, giggling, that her mother-in-law did not see her eating it. Her husband, who is present at the time of the interview, clearly does not like it that L. did not listen to his mother. A daughter-in-law should obey her mother-in-law or at least should pretend to do so. Eating these food items in secret is okay: the husband had in fact brought the banana from the market for his wife. But, she should not openly admit it, and certainly not boast about it.

### *CASE STUDY*

In the interview with K. she said she does eat banana, etcetera during pregnancy. We asked whether she, like other women, believed that it would lead to illness of the child or not. She said she just eats everything and does not bother. At that moment, an elderly lady (family member) came in and listened to us. Then, K. suddenly starts to use sentences like

“one should not take banana”

and

“they say one should not take ...”.

In this way, K. paid respect to the elderly lady, and pretended that she avoided these food items during pregnancy although in reality she did not.

Thus, women definitely do eat some of these food items. But maybe only in small quantities. Because if her child becomes ill or dies due to a cold or cough or *hotte andu*, people definitely say, as occurred in one case:

“it is because she ate banana during pregnancy”.

Women who have to establish their status in a new family, who have to prove their fertility and who are dependent (thus especially women who were pregnant for the first time) certainly do like B. did:

B: “it is better not to take any risks, it is just a precaution” (not to take banana, etcetera). It is better to observe the rules for if the child becomes ill, we will be blamed for it”.



## Chapter 7 Beliefs about quantity of food intake and other proper behaviour during pregnancy

Following Chapter 6, on quality of food intake, here we focus on beliefs regarding the quantity of food intake during pregnancy. Similarly as in Chapter 6, the information is based on interviews conducted with 159 pregnant women and in-depth interviews conducted with 32 of them.

Asked how much they ate during pregnancy compared with their normal food intake, most women (54.4 per cent) mentioned that they ate the normal amount during the first months of pregnancy and less than normal in the last trimester. More than 30.0 per cent claimed that they ate normally during the whole pregnancy. Another 12.0 per cent stated they ate less during the first months and normally afterwards.

Women in villages count their months of pregnancy according to new moon (*amawasya*) or full moon (*hunnime*). A pregnancy in their view thus lasts ten lunar months, but often delivery is expected to take place before ten months are over.

From month six of pregnancy onwards more women claimed to eat less. In the last months, the percentage amounted to 54.4 per cent (N=86). The percentage of women eating normally in these last months was 42.4 per cent (N=67).

Only seven women stated that they ate more than normal during pregnancy, as international standards recommend. They reported to be eating one or one and half rotli more every meal during pregnancy. Asked why they ate more, they mentioned that either they “liked to eat more” or “were just hungry, so ate more”.

Those women who stated they ate less during the first months of pregnancy had nausea and could not eat their normal amount of food. Afterwards, they started to eat as normal or sometimes ate less again at the end of pregnancy.

Indeed, more than half of the respondents claimed that they ate less at the end of pregnancy. As one key-informant, the night-school teacher in the village of Devarhubli, told us it is regarded as quite a common feature:

“the doctor says: eating more is better during pregnancy. The woman will feel better. But in daily life in the village women do not eat more. The longer the pregnancy close to ten months, the women will eat less”.

Women claiming to eat less during the last months of pregnancy indicated how their food intake changed. Some of them spoke about a slow decline in food intake over the whole pregnancy:

“... daily daily I take less (*dinaa dinaa kadime*)”.

Others changed their meal pattern: instead of two meals and a *tiffin*, only two meals per day were taken or instead of full meals more tiffins were taken. Others indicated a change in the number of *rotti* taken per meal.

In the following subsections, two groups, i.e. women claiming to eat normally (N=67) at the end of pregnancy and women claiming to eat less at the end of pregnancy (N=86) are used for the analysis of beliefs about quantity of food intake during pregnancy. The few women who said they ate more are left out.



## Reasons not to eat more

After the statements about the amount of food eaten in the different months of pregnancy, we subsequently asked the women why they did not eat more during pregnancy (as international standards recommend). The almost standard answer was:

“if we eat more, we women will have problems (*namge tras agatai*)”.

Different kind of problems could be identified. The perceived consequences of eating more during pregnancy are presented in Table 7.1. Many of these perceived consequences are related and are presented accordingly in the most logical order. We emphasize that these are the first reasons mentioned by women why they do not eat more, that is why they eat normally or less at the end of pregnancy.

**We will have problems (*namge tras agatai*).** A large proportion of the women, those eating less as well as those eating normally, answered that by eating more during pregnancy women will have problems (*namge tras agatai*):

G : “when we are pregnant, we are with two..... if we eat more *namge tras agatai*...”.

This consequence is rather important and is mentioned more often in this chapter. It indicates that first of all women do not eat more because it affects their own feelings of well-being.

**Acidity (*hulsudu*).** An item mentioned especially by women who said they ate less during the last months of pregnancy is acidity: *hulsudu* (or *huli*). Due to acidity, women do not feel able to eat more. The perceived etiology of acidity is an interesting one. As S. said she eats less after five months of pregnancy:

S : “You know why I eat less?? ... the child is there, it has a lot of hair: then there is *hulsudu* and therefore I eat less”.

Women believed acidity starts because the foetus has a lot of hair all over its body. A private doctor with a nursery in Dharwad, which is often visited by village women, explained that she anticipates this belief and prescribes tonics against “the hair of the baby”. The local remedy against *hulsudu* is application of *sunna* (lime, commonly chewed with arecanut and betelleaf) on the outside of the throat. A few women said they drink milk, buttermilk or curd against acidity.



Table 7.1. Reasons not to eat more during pregnancy

Reasons not to eat more during pregnancy	Mentioned by % of women (claiming to eat less in last trimester)	Mentioned by % of women (claiming to normally in last trimester)
we have problems ( <i>namge tras agatai</i> )	60.5%	40.3%
acidity ( <i>hulsudu, huli</i> )	44.2%	23.9%
breathlessness etc ( <i>ekase</i> )	38.4%	25.4%
no capacity ( <i>khapsu dilla</i> )	34.9%	9.0%
stomach pain because of a full stomach	32.6%	23.9%
vomiting	31.4%	26.9%
child is there: not possible to eat more	23.3%	11.9%
no digestion	22.1%	10.4%
not being able to work	20.9%	4.5%
just not feeling like eating more	19.8%	13.4%
eating like this: just good for mother's health	18.6%	34.4%
just cannot eat more	16.3%	14.9%
feeling tired / bored ( <i>aiasse</i> )	16.3%	4.5%
child will not move	14.0%	11.9%
child will not move:	12.8%	9.0%
we have problems		
no strength ( <i>shakti</i> )	9.3%	3.0%
circumstances	4.7%	6.0%
child will be small		4.5%
no food available		3.0%
distribution of food in the family		3.0%
child will be big		
	N = 86	N = 67

No digestion / *khapsu dilla* / no strength (*shakti*). Many women, and again especially those reducing their food intake, mentioned they ate less because *khapsu dilla*. *Khapsu* was often translated by the assistants as ‘capacity’ but a better translation is digestion. During the last months of pregnancy, there is no digestion and women could not eat more. Another word for digestion is (*pachana*).

M: who ate one whole meal less after five months of pregnancy, said:

M: “there is no total digestion (full *khapsu dilla*)”

And S. who stated to eat a little bit less (no full meals) after five months of pregnancy said:

S : “If we eat full meals, then there are problems: there is no digestion. (*naavu full oota maartewe ... tras agatai: khapsu dilla*)”

And one of the respondents who said:

A : “if there is more *khapsu*, more food can be taken; one takes food according to her *khapsu*”

related it further to *shakti* (strength). If there is more *shakti*, then there is more *khapsu* and one can eat more food. More women mentioned this relationship between *shakti*, *khapsu*, and food intake. The general idea is that women who are less healthy (*ashakti*) have less *khapsu* and as a consequence eat less. While women who are more healthy (*shakti*) digest the food more easily and thus can eat more. *Shakti* is believed to decrease with age: during a lifetime *shakti* becomes less and less. Women of higher parity stated they ate less during this pregnancy: less than normal and less compared with their former pregnancies, as the following case study illustrates.



## CASE STUDY

T: "She also says: during the first pregnancy, there is more *shakti* for women. During that pregnancy she could eat more. But during her second pregnancy: there was less *shakti* and she ate less food. During the third: again there was less *shakti* and again she ate less compared to the second".

I: then, why is that??

T: there was *ashakti*: she lost her capacity for meals".

One of the key informants, again the nightschool teacher in Devarhubli also mentioned this decline in *shakti* and thus food intake with parity, but associated it with too short intervals between the subsequent pregnancies:

"Suppose you had a delivery and your strength is less: if you take pills on the proper time, you can not become pregnant. Then there is more time and there will be development of the woman, she can become strong again. But that is in the cities .... It is not like that in the village".

A special case, concerning a woman who ate less because she had no *khapsu* due to possession by an evil spirit is presented later.

***Ekase / aiasse / vomiting.*** Many women reported that if they ate more, *ekase* would occur. *Ekase*, a typical village Kannada word, is not included in the standard Kannada-English dictionary written by Kittel (1894). The Mysore Kannada word *kakassa*, however, seems to reflect the same idea as it is described as "trouble (heavy breathing etc) arising from an overloaded stomach, from running fast etc".

In the villages, *ekase* indeed is associated with eating too much. One of the research assistants described *ekase* as a problem (pain) occurring between the heart and the stomach, i.e. the chest. Also a doctor in Dharwad, often consulted by villagers, said that all kinds of problems located in the chest are called *ekase*. The respondents mentioned symptoms like a feeling of heaviness in the stomach because both child and food were there, acidity (*hulsudu*), breathlessness, heart beatings, no digestion, gas problems, vomiting, feeling tired and dull (*ayasa*) and not being able to work and walk freely. *Ekase* occurs when one eats a lot of food. As one of the respondents explained:

“.... 1.5-2 hours after having meals *ekase* occurs. *Ekase* means some problems: not being interested in working or in doing anything”.

Everybody can have *ekase*. Among pregnant women, however, it occurs sooner because the child is there in the stomach.

**Child is there and cannot eat more / stomach pain because of a full stomach / just cannot eat more / do not feel like eating more / eating like this is just okay for health of the mother.** As mentioned above, pregnant women develop *ekase* sooner because the child is there in the stomach, as the following case study indicates:

#### *CASE STUDY*

I:”How much do you eat in month ten of pregnancy?

G:In month ten: I eat less (*kadime*)

I:why do you eat less?

T:more eating during pregnancy, the child is heavy, they two (mother and child) are heavy ... then eating more ... *ekase* starts”.



In the interviews, women appeared to mention often:

“The child is there in the stomach, THEREFORE I eat less”.

Here we should explain that in local Kannada a pregnant woman is addressed as *avulu hottilli adaale*, literally meaning ‘she is with a stomach’ (*hotte*). A spontaneous abortion is called *hotte hoitu*: ‘the stomach died’ or *hotte mugitu*: ‘the stomach has finished, has stopped’. A woman who went to hospital where they discovered a severe malformation of the foetus and an abortion was induced said that her ‘stomach was washed’. Also food is goes to the *hotte*. Some studies report that women believe that both food and child are in one and the same place: the stomach. Many of our respondents did not have any idea where the child was or where the food was in the stomach. As one of the poorer respondents said laughingly:

“how do we know?? we are no doctors! we just work and eat, that is it”.

Some believed the child and food to be together in one place. But quite a few mentioned that the child is in a separate place: in the *kusin chilla* (literally: ‘bag for the child’). Educated women also mentioned the Sanskrit word: *garbha kosha*. But in general, the part of the body where the stomach, belly, and uterus are located all together was called the *hotte*.

Women claimed to eat less, or not to eat more, because the child was in the stomach. A traditional birth attendant clarified this further:

“The child is growing; growing especially at the end of pregnancy. And therefore, .... daily daily .... pregnant women eat less food”.

The child is believed to be completed after five to six months and to start to grow. As pregnancy progresses, more and more space in the stomach is occupied by the child and less place is left for food. Some women explicitly said that at the end of pregnancy the child is big:

“if the baby is big .. it occupies more place ... then, if eating more, we will have stomach problems”.

This is an important statement, indicating a reversed relationship between food intake and size of the child. As literature states that women in developing countries eat less because they do not want a big baby, here women stated that **because** the child is big at the end of pregnancy, they ate less. If more space is occupied by the child, logically there is less room for food.

The statement that women eat less because the child is there, must further be related to the idea which is highly prevalent in society: one eats until the stomach is full.

If they eat too much and the stomach becomes too full, problems like pain or tightness of the stomach are reported. In the same way, women said they just cannot eat more:

“If I eat the normal amount of food: I am full. I cannot eat more. I do not feel like eating more”.

### *CASE STUDY*

“The doctor told me to eat more fruit, *rotti*, rice, and vegetables. It would be better for the blood ... better for my health and also the child is developing better. But we do not eat more: it cannot be controlled. How much a stomach can take, that is sufficient”.



Some women, when asked why they did not eat more during pregnancy, even became angry and replied that they just could not eat more. And women said that eating like this, less or normal, is just okay for the health of the mother.

**Child will not move / child will not move and WE will have problems / child will be small.** While the child is there in the stomach and occupies more and more space as pregnancy progresses, eating too much leads to *ekase* and stomach pain. But eating too much would also mean that no room is left for the child to move or rotate. Eating less, makes it possible for the child to rotate.

H. who stated that she took the normal amount of food during pregnancy said:

“When the child is there, it’s moving; if it stops, then we leave the meals”.

If the child does not move, in the first place, the mother is believed to have problems:

R : “Eating less, then we do not have problems and the child turns around. And if the child moves: WE have no problems”.

A few women, all of them claiming to eat the normal amount of food at the end of pregnancy, said they did not eat more because then the child would be small. No rotation and the child being small were related to each other as will be discussed in detail later.

**Ayasa / not being able to work and walk freely.** Several women, especially those eating less during pregnancy said they did not eat more because then they would not be able to work and walk freely. *Ekase* is associated with this factor, as R. explained:

“Eating more, *ekase* occurs. We feel tired, like to sleep and sit and are not able to do the work. And in our husband’s house we have to work ... Eating less, there are no problems and we just work more and better”.

Also the other factors mentioned above are related:

“the child is there in the stomach .. and gives too much weight ... eating more food makes it more heavy: we cannot work and walk freely”.

A birth attendant illustrated this last argument further by showing how difficult it is for a pregnant woman who has a ‘tight stomach’ to bend and cut the rice. And especially the women in the lower economic classes cannot afford not to work in either the fields or stone quarry: they have to earn an income.

One of the respondents ate a gruel (*ganji*) of barley rice during pregnancy: she said it was easy to digest and light for the stomach. Taking it, she had no heavy stomach and could do the work she had to do.

**Circumstances.** Economic circumstances were mentioned by a few women (N=3), all stating they ate as normal:

“how can we eat more: we are poor people”.

For women who stated they ate less at the end of pregnancy, this economic factor did not play a role at all. This is easy to understand: women said they eat less because of pregnancy. Among the household members, they are the only ones who eat less while all others consume the normal amount.

The fact that women do not eat more because they will not be able to work and walk freely however has an economic angle. Women of lower economic classes have to work outside and earn a living.



## CASE STUDY

A., a Muslim woman, states that during her earlier pregnancies she ate less. But, now during her third pregnancy, she eats all the things she wants to eat. Why the difference? A. says that during the earlier pregnancies, there were many people in the household (her husband's mother, his brother and wife) and in those circumstances, as she says:

“I could not eat freely”.

The other people left however, for Goa in order to work there, and as M. continues:

“Now we are with two in the house, my husband and me. Now I am pregnant, and he gives me ... what I like to eat, hence I can eat”.

A few women mentioned they did not eat more because of the **distribution** of food in the family. As the mother of one of the respondents said (a quarrel was going on between the families and the respondent fled from her husband's house):

“how could she eat more; there the first preference is given to the husband”.

A factor related to this social and psychological control within the family, is illustrated by the foregoing case study. This case study illustrates a more psychological aspect regarding the amount of food eaten during pregnancy. Due to social control and mental pressure from other people in the household, this woman did not feel free enough to eat whatever she wanted. This factor is more important in joint families than in nuclear families and also varies with parity. As explained earlier, women who are just married, who have to get used to a new family and have to prove their fertility, definitely experience more psychological pressure.

Other circumstances affecting women with regard to the amount of food intake are the following.

- in the summer season it was considered to be too hot to eat a lot of food;

- an accident with a child, worries about his health and a consequent long stay in the hospital prevented a woman from eating much during this pregnancy; the death of a child due to an accident affected another respondent in the same way.

A special case is the one of S. who stated she ate less during the last months of pregnancy, because there was no *khapsu* due to *gaali* or *devva*.

### CASE STUDY

S. tells us that when she was pregnant in the sixth month, her husband's uncle died. S. was very fond of this uncle. But when he died, she and her family did not take enough care, and she was affected by *gaali* or *devva*: she was possessed by the spirit and was unconscious for some hours. Then she started to move again on her own. After this incident she felt very weak (*ashakti*): she had no *khapsu* and she did not eat much.

*Gaali* in Kannada is 'wind' or 'air', but also means a demon or an evil spirit. Besides *gaali* also *devva* is used (also *bhuta*, often translated as ghost or spirit of a deceased person). All are malignant spirits but each has another connotation. One of the respondents explained: *devva* is always present, everywhere in daily life and *gaali* is an evil spirit that inflicts very suddenly and one is very scared of it. Most *gaali* and *devva* are present in the night time and six hours after dawn, at the heat of the day. This is one of the reasons why children are not taken to the fields. Possession by a spirit leads to un-consciousness, trembling and screaming. As an assistant told us, a person possessed by a spirit



should go to the priest who finds out who the evil spirit is and advises what has to be done to get rid of it. For example, a *puja* must be performed or *mantras* recited. Only when this has been done, can one get better. People are very scared of evil spirits. Pregnant women and more so wet mothers and young children are especially vulnerable to their influence (see next Chapter).

In this case, it was said, the family had not taken enough care: S. was not protected enough against possible influences of evil spirits. As the assistant who lives next-door said: “S. was fully neglected” because a quarrel was going on in the family and recently T. and her husband separated from the main family. In that situation, S. was more vulnerable.

**Big child.** None of the women stated that they did not eat more as they feared the child would be big. The idea that women eat less during the last trimester of pregnancy because the child will be too big and this would lead to a difficult delivery is not at all confirmed here. On the contrary, women said the opposite: because the child is big at the end of pregnancy and occupies more space, they ate less.

**Conclusion.** Given these perceived consequences of eating more, which are the first reasons mentioned by women why they eat as normal or less at the end of pregnancy, it is clear that in the first place women do not eat more because it would affect their own health and feelings of well-being in a negative way. If they eat more, problems like acidity, *ekase*, indigestion arise. As the following case study nicely illustrates:

### CASE STUDY

“if we eat more, then WE will have problems; for the child there are no problems!! (*Hechchige oota maadtewe, namge tras agatai; kusige tras agudilla*)”.

## Perceived consequences of amount of food intake for the child

In the interviews, after having discussed the different reasons for not eating more during pregnancy, we subsequently focused on the perceived consequences of the amount of food intake for the child. Women indicated that they did not eat more at the end of pregnancy because they would have problems with their own health. But what did they think would happen to the child if they ate more and what would happen to the child if they ate as they did, either normal or less?

### *Perceived consequences of eating more for the child.*

The women were asked “what would happen to the child if you eat more during pregnancy?”.

Only a few women believed that eating more during the last trimester would lead to a **big or more healthy** child. Although they said that it would be better for the child to eat more, they did not do so because they themselves would have problems like *ekase*.

### CASE STUDY

I : “How much do you eat during pregnancy?”

G : In month six of pregnancy, less

I : Why do you eat less?

T : If eating more ... during pregnancy the child is heavy, they two are heavy ... if eating more: *ekase* occurs

G : if we eat more, that is good for the child (*jaasti oota maadtewe ... chello kusige ...*)

I : and eating less ...

G : the child will be weak ... but it is God who gives ...”

We already saw in the last subsection that women said they did not eat more because then the child would **not move**. Here,



more women (10.5 and 9.0 per cent respectively) indicated this consequence of eating more: there would be no space for the child to rotate in the stomach. Some women associated this lack of possibility for rotation to the size of the child. If the child is not able to rotate, it will be small. 19.7 per cent of the women who said they ate less during the last trimester of pregnancy and 13.5 per cent of those who said they ate normally, indeed relate eating more to a **small or less-developed** child. A traditional birth attendant illustrated this notion with a beautiful example:

### CASE STUDY

Y : "If you eat much during pregnancy, the baby will be small (*sanmu*)

I : Then, how can it be: eating more, a small baby?

Y : (pointing at a bag with just harvested paddy). You see this bag full of paddy? It's full: all the grains are packed together within the bag. If there is a child, how would it look? Does it have any space to develop??"

However, the majority of the women stated that eating more would **not** have **any effect** on the child and they did not relate eating more during pregnancy to a big or small child. The high percentage of women mentioning this, can be explained by the fact that a question about consequences of a behaviour which is not conducted (i.e. eating more) is much more difficult to answer than one about actual behaviour. The higher percentage of women claiming to eat as normal and not knowing what will happen to the child, might be due to the fact that women eating less than normal were much more aware of eventual consequences for the child than women who did not change their food pattern and eat just as normal. The other answers were the child will be just normal and, the child will be *arama*. Some said they did not know.

## *Perceived consequences of eating less or normally for the child.*

After having posed the question what would happen to the child if more is eaten, we asked women what the effect would be of not eating more. In other words, what would the effect be on the child if less or the normal amount is eaten. Very few women said if they eat less or normally, the child will be **small**. Here, too, we can remark: these women mentioned that this, however, was not the reason to eat less:

### *CASE STUDY*

“If we eat less, then the child will be small. But I cannot eat more. If I eat more, there is no digestion, I have to vomit. That’s the reason I eat less: not because the child will be small”.

Quite a high percentage of women (respectively 26.3 and 22.4) believed that if they eat as they do during pregnancy the child has more space to **move around** in the stomach.

### *CASE STUDY*

T : “she says: if the stomach is full, then there is no rotation of the baby.

I : aha, how is the baby rotating?

T : when the stomach is empty”.

Rotation is not only considered to be good for the child but also for the woman:

### *CASE STUDY*

I : “why do you eat less?

A : (if I eat more), there will be problems for us (women)

I : what kind of problems?

A : the child will not turn around. When I eat less, I feel very well. And if the child turns, the child is also okay”.



However, there is a limit: if not enough food is eaten women complain about the child kicking too much, giving them a feeling of being unwell. If they eat a small tiffin at the moment when the child worries them, the kicking stops.

Rotation or movement of the child was an important signal for the respondents. If the child moves, women know that everything is okay. Women believe the child is completed at month 5-6 of pregnancy and then starts to grow and rotate. Several respondents told us that they were worried around the sixth month of pregnancy because they could not feel the child moving and they went to hospital to check whether everything was okay.

Especially women who claimed to eat less at the end of pregnancy, believe that the child will have more space to rotate and as a consequence will be **better developed** (23.6 per cent) or **big** (only 5.9 per cent).

B. from Mandihal is one of the few women believing the child will be big if eating less:

B: "eating less, the fatter the baby".

Better developed is not the same as being big. The difference between the two is quite important. The following case study illustrates the difference:

### CASE STUDY

N. tells us that she ate less during the last two months of pregnancy. She had problems like *ayasa* and acidity. When asked about the effects of eating less on the child, she tells us that the child will develop well. In Kannada, *kusu beelitaite*: 'the child will grow like a crop in the fields'. Only if nothing is eaten, does she believe the child will be weak.



However, the red tablets given by the local nurse, those she did not take: for the child will be big or fat (*pushti*), and lead to problems at the time of delivery.

This is quite an important difference: eating less makes it possible for the child to develop well, while iron tablets are believed to lead to a big and fat child, giving problems at the time of delivery.

Most women, and especially those who stated they ate normally, explained that if they ate the way they do, i.e. normally or less, the child will be **just healthy**, will be **just okay**, will be **aram** (fine, okay).

#### *CASE STUDY*

“if I eat more, the child will be thin. If I eat less, the baby will be normal. The child will be *chello* (good), *arama* (fine)”.

Again there is a relationship between rotation in the stomach and being healthy. A child which moves in the stomach, that's a healthy child:

#### *CASE STUDY*

K :” if I eat less, I am healthy; the child is nicely moving and is also healthy (*arama*)”

Some women said that their actual amount of food intake did **not** have **any effect** on the child. They did not see any relationship between food, the size or health of the child. One of the respondents said that eating less after six months of pregnancy would not have any effect on the child:

“The child is completed at six months and healthy and big, and eating less does not have any effect”.



On asking another woman who said she ate less at the end of pregnancy what the effects would be on the child: would the baby be small or big or normal?, she reacted indignantly to the question:

“how can it be, it is natural. It is God’s blessing whether the child will be big or small. It does not depend on food”.

And again another respondent stressed that food does not affect the size of the child, but iron tablets do.

### *CASE STUDY*

A: “there is no relationship between food and the size of the baby. When I went to the hospital, they gave me tablets. If I take the tablets, the child will be fat (*dappa*). So, I did not take those tablets. But eating meals, that will not affect the size of the baby, it will not become big”.

*Conclusion.* Given these perceived consequences of quantitative nutritional behaviour for the child, we first conclude that almost no women believe that if they eat more, the child will be big. On the contrary, more women said that if they ate more the child would be less developed or even small because the child is not able to rotate. Eating less or normally is related to the possibility for the child to rotate and especially women who stated they ate less relate this to a child which is well-developed. In brief, all women believe that how they eat during pregnancy, less or normally at the end, leads to a healthy child. Thus: women perceive a relationship between food and size of the child, but it is not the commonly known one.

In the in-depth interviews, still keeping the literature in mind where it is said that women eat less because they want to have a small child, we double checked the information by asking another question. Would the women like to have a small or big baby at the time of delivery?

## Preference: a big or small child?

We asked women what they would like to have at the time of delivery: a big child or a small child or any other child? The first reaction of almost all respondents was laughter and giggles. The answers given are presented in Table 7.2. Again, more than one answer was possible: women for example could indicate they wanted a small child but actually it was up to God.

More women (respectively 27.9 and 22.4 per cent) answered that they wanted to have a big rather than a small child at the time of delivery. A **big** child is considered to be healthy, smart, and beautiful. Others wanted to have a **small** child (17.4 and 14.9 per cent respectively), because then they would not have problems at the time of delivery. Almost all women who said this, immediately continued to tell us that therefore they did not take the red tablets (*kempu gulge*), or tonic tablets (*tonic gulge*), as they are called in the villages. They believed that these tablets

Table 7.2 Preference at time of delivery: a big, small, or ... child?

Preference	Mentioned by % of women (claiming to eat less in last trimester)	Mentioned by % of women (claiming to eat <b>normally</b> in last trimester)
A big child	27.9%	22.4%
A small child	17.4%	14.9%
Normal child	17.4%	9.0%
Any child is okay	24.4%	34.3%
It is up to God	29.1%	28.4%
	N = 86	N = 67



make the child big and they would experience difficulties at the time of delivery. As already mentioned before, not only the fear of pain or other physical problems are related to giving birth to a big child. More important is that if the child is big, women have to go to the hospital and undergo a caesarean which requires a lot of money.

Of these women who claimed they wanted to have a big child, 81.5 per cent said they did not take the iron tablets because that would lead to too big a child. Their statement about their preference for a big child should therefore be interpreted with care. A high percentage of women stated that **any child would be okay**, it does not matter whether it is a small or big child. As T said:

“If the child is healthy, that is more important”.

Others were much more occupied with surviving themselves than thinking about what kind of child they wanted:

I : “What would you like to have: a big child or a small ... ??”

M: “what shall I do? I work in the fields and at home. I do not care about a small or big child”.

Others said:

“I do not care for a small or big child; even if the child is small at the time of delivery, I will give it milk and some good care and it will grow after delivery”.

This idea is more prevalent in the villages: more women mentioned that if the child was small at the time of delivery they could take extra care after delivery and it would grow and catch up in growth (see next Chapter).

Women who stated that they wanted to have a small or big child often weakened their statement by adding immediately that ultimately it is up to God.

### *CASE STUDY*

S : "I want a small baby. A big baby will give problems for delivery. Whatever God gives is alright, but a small baby is nicer. If it is a big baby: an operation is needed".

This item, **it is up to God** scored highest of all. When asked what she would like to have, a respondent hits her forehead and reacts:

"How can you ask??? It is up to God: a big child is okay, a small child is okay".

This item was encountered in many sentences in the interviews formulated as

'it's up to God'

'God gives'

'It is God's blessing'

'It is left to God'.

Others had other ideas about the kind of child they wanted:

"I do not care about having a small or big child: I want a boy!!"

or

"I like to have a child with a fair complexion".

### **Social norm regarding quantity of food intake**

Just as with the quality of food intake, we asked women who told them to eat as normal, more or less. And, not unexpectedly



given the reasons why women do not eat more, most (98.1 per cent!!) respondents answered it was their own decision not to eat more.

### CASE STUDY

“No-one told me to eat more or less; when I am more hungry, I take more food, otherwise I don't take”.

However, especially the lower parity women did not know what the effects of the amount of food intake would be on the child. Usually their mother-in-law or mother or older women present in the household answered. Higher parity women, however, knew the effects on the child of eating more or less.

### Summary

Most respondents stated they did not eat more during pregnancy. Over half of the women stated they ate less at the end of pregnancy, the others claimed to eat as normal. The main reasons not to eat more are related to feelings of well-being of the pregnant women themselves, not to the child. Women feel they cannot eat more: if they do, they themselves have problems (*namge tras agatai*). If eating more, the following problems occurs: *ekase*, *ayasa*, not being able to work and walk freely. Women stated that because the child is in the stomach and occupies more space, no more food can be consumed. Several women said there was just no digestion to eat more, or acidity prevented them from eating more. The idea mentioned in the literature that women eat less at the end of pregnancy because they want to have a small child was mentioned by none of the respondents. Actually, the relationship is reversed: because the child is big at the end of pregnancy and occupies more room, women start to eat less. If women eat more, the child will be thin and be less-developed because there is not enough room for it to rotate and grow. Women believe that if they eat less (or better: not more) the child is able to rotate more in the

stomach. If the stomach is too full, there is no more room for the child to move. Rotation was not only considered to be good for the child, who would be able to develop more. If the child rotates, the mother feels better too.

The factor that the child would be able to grow more if they ate less, however, is not a reason to eat less. Reasons not to eat more are all related to the health of the mother herself. Enhanced growth possibilities are coincidence rather than deliberately pursued goal. The first reason to eat less at the end of pregnancy is related to the physical well-being of the women themselves.

Regarding quantity of food intake during pregnancy, important others do not play a role at all. Almost all respondents mentioned it was their own decision to eat less.

### **Beliefs about other proper behaviour during pregnancy**

Besides beliefs regarding nutritional behaviour, related beliefs regarding other proper behaviour during pregnancy are prevalent. Some of these beliefs are described in this section.

The ‘shadow of death’ should not fall on pregnant women. One example about a respondent who was possessed by an evil spirit has already been given. Here another example is given:

#### *CASE STUDY*

S. tells that during her pregnancy she was afraid at home. An old man living opposite her house had died while she was pregnant in the fifth month. S. says “it was all *driishti*”. *Driishti* means “the eye, seeing” (Kittel, 1894), and here it means the evil eye. Actually the evil eye is not related to death itself but to envious relationships between people.

To prevent any ill effect on the child and to feel less worried herself, S. went to a temple in a nearby village. She offered a



coconut, betelleaf (*yeele*), some incense sticks, and seven rupees. The priest gave her an amulet (*taita*) which she wore to protect her during pregnancy and she felt fine.

Other respondents also wore a special **amulet** during pregnancy. They had bought them either from religious persons visiting the villages or at the market place.

During pregnancy, women also avoid the touch of **menstruating** women who are believed to be polluting. If a pregnant woman is touched, it influences the health of the child, not the woman herself. Several women with either very weak or very thin children or with children who died said this was due to the touch of a menstruating woman: *muttu dosha*.

### CASE STUDY

C. tells us that pregnant women should not touch women who 'sit outside' (the expression for women who observe segregation during menstruation). During five days, women who menstruate should not touch a child or pregnant woman. C. gave an example. During her last pregnancy, a girl in her family reached maturity, an event which is celebrated by conducting a ceremony. However, she did not attend as she was pregnant.

During **lunar and solar eclipses** (*grahana*) pregnant women should keep quiet, without doing anything and just sit silently in the house. If they conduct any activity, the fetus is negatively affected. An example: if they break fuelwood at the time when an eclipse takes place, the legs of the child will be broken. In one of the villages, a child with a harelip was believed to be born with this malformation because its mother did some work during the eclipse. Other body malformations of children can also occur:

## CASE STUDY

When we visit P. who was pregnant in the eighth month of pregnancy, she had delivered the previous day. The child was severely malformed: the lower half of the body was not well developed. Although P. first attributes it to the tetanus injections given during pregnancy, creating too much heat (*kaavu*), her *atte* tells later it is because of the *grahana* which took place during her pregnancy. At the moment of a moon eclipse, P. was washing the clothes: wringing the clothes caused this malformation of the lower half of the body.

People know exactly when there is an eclipse: it is written in the *panchanga* and mentioned in the local Kannada calendars. When the eclipse is over, a bath is taken and a *puja* conducted.

Given the great preference for sons, various factors are believed to influence the sex of the child (although ultimately it is said to be up to God). A few women said that the date of conception determines sex of the child. If a child is conceived in the new moon period (15 days after *hunnime*, i.e. is *amawasya*) it will be a boy. In the full moon period, it will be a girl. Most women mentioned that if the child is on the right-hand side of the stomach, it will be a boy. If it is located on the left, it will be a girl. Of course, during pregnancy most women said that their child was located on the right-hand side.

Photographs of a boy or girl on the walls in the place where the couple sleeps are also believed to influence the sex of the child. One of the respondents went to a special temple dedicated to Veerabadra (an emanation of Shiva) in order to pray for a son.

There were various other examples of behaviour and events during pregnancy to influence the child. One woman told us that her newborn baby's tongue stuck out like a snake, because during her



pregnancy she had come across a snake in the fields. Another respondent listened very attentively to a special story of Satjanarayan with the certainty that it would have positive effects on the child. Furthermore, it is considered very important for a woman to be cheerful during pregnancy: joyful and without worries in order to have a healthy baby.

Beliefs regarding food and other proper behaviour which are prevalent during pregnancy are related to beliefs prevalent during the period after delivery. While heating food is believed to be best avoided during pregnancy, in the period after delivery extra amounts should be eaten, as we will see in the next chapter.

## Chapter 8 Beliefs about eating and other behaviour in the child's first month of life

We now look at beliefs in force in the child's first month of life. Beliefs about what kind of food to avoid or add in this particular period are related to either the health of the mother or that of the child. For example, in the first days after delivery women eat only some special wheat preparations which are considered to be heating and to give energy back to the wet mothers. At the same time, in the first months after delivery water intake is reduced to approximately one third of the normal quantity because it is believed to dilute breastmilk and lead to cramps in the baby's stomach.

Like beliefs concerning food intake during pregnancy, beliefs about eating in the period after delivery are related to notions of ethnophysiology. One important such notion is the concept of *hasi may*, encompassing the body constitution of the wet mother, which governs not only nutritional behaviour but also other behaviour in this particular period.

First, however, let us describe how deliveries are conducted in this area and the customs and practices in the first days after delivery.

### Delivery and the first days after delivery

In this section we take a look at the conditions in which deliveries in the research area take place. Most of the following information about delivery and the first days after delivery was obtained through key-informant interviews of traditional birth attendants.



## *Deliveries*

Most women in the study population (82.8 per cent) gave birth at home, either at their parents' (*tavaru mane*) or their husband's house. A small number of deliveries, only 33 took place in hospital. Six women were referred to hospital due to complications. The other women who delivered in hospital were of lower parity and had a higher level of education.

Most women, however, preferred to deliver at home. Economic reasons played an important role: a hospital delivery is quite expensive. This economic factor came up earlier when we discussed the deliberate avoidance of iron tablets during pregnancy. Women avoid these tablets because they believe that they lead to a big child. If the child is big at the time of the delivery, a caesarean would be needed. One of the traditional birth attendants explained and illustrated this as follows:

Y : (pointing at a brass waterpot) "do see this waterpot?"

I : yes

Y : the belly of it is big, you see, and the neck is small. Suppose a big baby is there in the belly: how is it supposed to come out through this narrow neck? That is not possible: the doctor has to open the belly to fetch the child."

Moreover, besides this economic consideration, mothers of the respondents told us they prefer their daughters to deliver at home because only there appropriate care for both mother and child can be provided.

Most of the deliveries which took place at home were conducted by a traditional birth attendant (65.0 per cent), the *dai* (*sulgitti*). A relatively high proportion were conducted by a family member, often the mother (30.3 per cent). Only a small number of the respondents got help from a village health worker (14.7 per cent). Here, again, economic reasons played a role again. One of

the key-informants, an older Madiga woman who conducted many deliveries in her family, remarked that poor women prefer a dai rather than modern health workers. She related this to the attitude of government nurses and doctors to give injections in order to induce labour: injections which are quite expensive. The data on birth attendance indicate that at least 30 per cent of all deliveries are attended by an untrained person.

In most villages, traditional birth attendants are present. Except for one young woman who lives in Devarhubli, most of them are elderly women. They belong to different caste groups. Four of them are Muslim while the others belong to Kurbar, Maratha, Gouli, and Lingayat.

Except for the very old women, all of them had received at least one training course provided by either the local hospitals in nearby towns or the development agency IDS. Most of them became a dai only after participation in such a training programme, as the case study on the next page illustrates. Another birth attendant living in Holtikoti (she is Maratha) learned how to attend deliveries from the former dai (who was Muslim) and only later on received an additional course in a hospital. The birth attendant in the Gouli hamlet did not receive any training and acquired her skills from her mother-in-law who had worked as a dai for many years. When she grew old, the present dai took over. Most of the traditional birth attendants claimed they helped in the normal deliveries and referred women with complications to the hospital.

### *CASE STUDY*

P. is a dai in the village of Mandihal. In the six years in which she has worked as a traditional birth attendant, she has conducted about sixty to seventy deliveries. In the village, she is called the government dai. Six years ago she was selected by the local nurse to participate in a government supported training scheme for birth attendants. She had never conducted deliveries before. She went to



the hospital in Alnavar, a small town nearby, and followed a course of four days and then started the job. Only during the first three months, she says, did she receive a remuneration from the government. Since then, she only receives a remuneration per delivery provided by the family of the delivered woman.

Deliveries take place on the ground: most women just squat on some bags or clothes, sometimes on a wooden plank (*mane*). Most women give birth in the sitting position, with a basket (*butti*) in front for support. However, the younger birth attendant who was trained more recently told us she likes women to lie down. Squatting drains too much energy from the woman, she believes, and she herself is more able to give appropriate help if the woman is lying down. The Gouli dai told us that in her community, a woman is supported by two other women at the time of delivery: one behind and another in front of her.

Some special food items are known to speed up the process of birth. Cummin (*jiirge*) boiled with water and sugar is commonly taken in all villages, while women in the forest area drink a concoction made of a fruit grown in the forest called *gadjiga*. Also ghee (clarified butter) is believed to quicken delivery due to its heating (*kaavu*) qualities. Hot tea is commonly drunk during the process of delivery. Some women add butter as it is supposed to make 'the birth canal more slippery, so the child will come out more easily'.

In the previous chapter, we saw that during pregnancy women should avoid too much heat either evoked by food, work, season, allopathic medicines or sexual intercourse. Too much heat would induce a spontaneous abortion. At the time of delivery, however more heat is provided as it accelerates the process. Heating food like ghee or hot tea but also other items are applied. One of the dais told us she advises women to take a warm bath: the heat quickens the process of delivery.

Several other practices are known to make delivery easier and faster. Some birth attendants give massage with coconut oil or warm water and rub the belly in order to push the child downwards. Others use a rope (*patti*) which is put around the belly of the delivering woman, just under her breasts. The rope is believed to prevent the child from moving up at the moments the woman has contractions and to push the child downwards.

Most dais received a training and learned to cut the umbilical cord (*hokkala*) with a clean razor. In reality however few of them bring new razors at the time of delivery. Only the younger, recently trained birth attendant told us that she brings a clean razor each time. The family of the delivering woman pays a few rupees for it. All other attendants told us they did not have the money to provide a new and clean razor each time. If no razor is brought along, anything suitable or available in the household is used, often the sickle (*kudugolu*) meant for cutting paddy is used. Before delivery the instrument is sharpened and only after cutting the cord not before is it cleaned and washed with warm water. Indeed, infections of the umbilical cord were observed among children in the study population.

Very commonly, the cord is tied with some sewing thread. Most birth attendants said they did not apply anything to the cord. But the attendant in Mugad said she put dettol on it and the dai in the Gouli village told us that some dried pieces of cow dung are burnt and the powder is put on the cord.

The part of the umbilical cord which falls off a few days later can be used for an amulet (*taita*). It is dried and later put into either a leather, silver or copper amulet, which is tied around the child's waist to protect it against the negative effects of the touch of a menstruating woman, i.e. *muttu dosha*. Others said it would protect against the evil eye and evil spirits. If not used for a amulet, this part of the umbilical cord is immersed into the water of a river or tank.



At the time of delivery, if the placenta (*masa*) is not expelled soon enough after the child is born, the belly is massaged again. In general, the birth attendants told us they take half an hour as a criterium. Another way to get the placenta out is to drink cold water or to put the hair plait into the mouth in order to induce vomiting and contractions.

The placenta is put into a pot (*gadige*). Five different types of grains and five paisa are added. One respondent told us they took green gram (*hesaru beelee*), garlic (*belloolie*), arecanut (*adike*), thurdal (*toogaare beelee*) and *alsande* (kind of pulse). But in general any five grains can be added. Subsequently, a *puja* is conducted and the pot is buried deep in the ground so no animal can touch and disturb it. If an animal touches it, the physical or mental health of the child will be adversely affected. This custom of burying the placenta at the back of the house is practised by all communities. The Muslim dais in Mavinkoppa made a further distinction which symbolizes the status of women in society. While the placenta of a girl is buried outside the house, as she leaves the house at the time of marriage, the placenta of a boy is buried inside. This custom was only mentioned in this village and not known among the other Muslims in the study population.

After delivery, mother and child are bathed with warm water. From the first moment onwards, the child stays with its mother, on the *horsu* or sleeps in a small hammock (*joolige*) attached to the bed. (Later it sleeps in a cradle). The Gouli women put the new born child in a basket full of grass for a few days.

The *horsu* is a bed made of wood and woven thread and is fabricated by the carpenter in the village on an auspicious day indicated by the *panchanga*. At the time of the delivery, the bed is placed in a separate room or in a corner which is secluded from the rest of the house by curtains made of bags or blankets. These prevent wind, cold and dirt and also bad influences of people and

evil spirits from reaching mother and child. Under the bed, a charcoal fire (*benki*) is placed. Mother and child stay in this dark and above all warm place for some time.

### *The first days after delivery*

Birth is considered to be polluting (*mailige*) by all caste groups, also by the Harijans and Muslims. The period of pollution lasts for five days. The more traditional birth attendants visit the mother twice a day during these days and give her massage with oil, turmeric (*aarsna*), neem (*beevu*) and garlic. Both mother and child are given a hot bath. Each time, before returning home the dai takes a bath in the house of the wet mother (except in the case of the Harijans: then she takes a bath at home) in order to remove the pollution. Not all birth attendants provide these services during these first five days. If they do not, the woman's mother or another female member of the family provides the same care.

On the fifth day (*aidesi*), the end of the pollution period is celebrated with a ceremony. The house is cleaned with cow dung, clothes are washed, the bed is cleaned and a *puja* is conducted. The dai is endowed with some paddy, sweets, arecanut, plus betelleaf and some money. Sometimes also a blousepiece, a *saree*, or bangles are presented. The amount of the remuneration of the dai depends on the socio-economic status of the household, although the sex of the child may also play a role in the kind of remuneration: if a boy it might be higher.

On this fifth day special food is prepared: *kobri kara*. The ingredients differ from one household to another, but commonly consist of dried coconut and sugar or jaggery. Dried dates, gum (*antu*), ghee, cashew nuts, and spices like cloves or cardamom can be added.

Some caste groups, especially the lower ones like Bhovi, Madar, Madiga and Gouli celebrate the naming ceremony on the



same day. Maratha and Lingayat name the child on the 12<sup>th</sup> day (for a boy) or the 13<sup>th</sup> day (for a girl). Muslim children are named on the first day (given by the *mullah*) while on the 40th day a special ceremony is conducted. If a child is very thin and weak at the time of delivery, the naming often is postponed. Names for Hindu children are selected on the basis of astrology (represented in the *panchanga*), as the following case study illustrates.

### CASE STUDY

The child of one of the research assistants was born in January 1992, under the sign of *Kanya* (Virgo). According to the *panchanga* the name of children born under this sign should start with the Kannada letters 'pu', 'po', or 'pa'. This girl was named Pooja.

The name selected on basis of astrology is called the *Nakshatra* name. When the child marries it plays an important role: the *nakshatra* names of the future couple are compared to see whether they suit each other. The naming ceremony is predominantly a women's affair. One of the ceremonies which we attended took place in a Maratha Shivaji family. The ceremony illustrates how much marriage is a relationship between two families rather than between two individuals.

### CASE STUDY

The naming ceremony took place on an auspicious day and time as determined by the *panchanga*. Many women attended the ceremony which took place in the house of the parents of the wet mother. The cradle (*tottla*) of the child was beautifully decorated with flowers and the wet mother sat in her green *saree* on the ground next to it. During the ceremony, female members of the husband's family stood on one side of the cradle while those of the wet mother stood on the other side. The child (dressed in clothes presented by the husband's sister) was passed from one side to the other (thus from one family to the other) five times, alternately

under and over the cradle. Five times, possible names (some of them of Gods and Goddesses) were whispered by the husband's sister into the child's ear. The fifth time, she whispered the actual name and while doing so she was teasingly hit on her back by family members of the wet mother. A *puja* was conducted, *aarti* waved for the wet mother and presents given to the child.

Another event reported to occur on the fifth day is the appearance of the Goddess Shetigaava. (The fifth day is also called *Shetigaava vaara* the day of Shetigaava). In the night, the corridor in the house is kept free for her arrival. It is believed that the Goddess comes and writes the fate of the child on its forehead.

All these customs are generally practised by all caste groups, with some variation. Muslim women, for example, celebrate *aidesi* but also observe customs not known among Hindus. During the first days after delivery Muslims put five things under the *horsu*: garlic, cashew, dried dates, cloves and arecanut together with a needle and black thread. In addition, on the 40th day after delivery, they conduct a ceremony in which the old things are removed and replaced by new things. Old bangles and clothes make place for new ones.

During the ceremony on *aidesi*, a dried piece of root (*bhajji beeru*) is tied around the wrists of both mother and child. Its purpose is explained in different ways. Some women said it will keep the body of both mother and child warm. Others said it is just a symbol of the wet mother and yet others told us it protects both mother and child against evil spirits during this period of *hasi may*. Here, we come to an important concept referred to in the first period after delivery; *hasi may*, which determines nutritional behaviour of women after delivery.



## Beliefs with regard to the mother

We mentioned before that beliefs about food intake in the child's first months of life are related to either the health of the mother or that of the child. In this section, we focus on the first relationship and we also discuss the concept of *hasi may*.

### *Beliefs about food intake*

During the first five days after delivery, women eat only sweets made of wheat with milk and sugar or jaggery (*payasa*, *sajjaka*, *alavi*, or *rava ganji*). Wheat, sugar, and jaggery are considered to be heating, and heating food (like other items with heating qualities as we will see in the next paragraph) is considered to be essential in this period after delivery.

At *aidesi* (the fifth day), *kobri kara* is added to the diet. A special sweet, *ladu*, to be bought at the city market is eaten. It is very rich, made from heating foods like wheat, dried fruit, dried coconut, nuts, and gum. However, in the study population only a few women, in the higher socio-economic class, could afford to buy it.

Some time after delivery, rice and *rotti* are eaten again. The period in which rice and *rotti* are avoided varies widely between respondents. Some women started to eat it again after five days, others after two weeks. However, in the period after delivery *rotti* and rice are only eaten immediately after preparation while they are still hot and fresh. *Rotti* and rice which is kept after preparation is considered to be cold and hard and should be avoided as it causes stomach problems for both mother and child. Due to this belief, lactating women often do not consume the food supplementation provided by the *anganwadi*. Women receive the *uppittu* some hours after preparation when it is no longer fresh and hot. In addition to hot rice and hot *rotti*, in the period after delivery other heating foods like eggs, mutton, and ghee are consumed more often.

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While heating food is considered to be essential, cold food should be avoided in the period after delivery. Women drink warm water only and avoid cold water. Also cold food like curds (*mosaru*) and buttermilk (*majjige*) are avoided.

Other foods which are avoided are fresh green chillis, pumpkin, brinjal, and sweet potato. Some women also avoid lady fingers, arecanut, and *ginna* (colostrum of the cow). These are said to be *barsna* for both mother and child: they lead to an adverse reaction of the body. Fresh chillies, for example, cause stomach pain for the mother and, via breastmilk, dysentery for the child. The other foods are believed to cause swellings (*baavu*) in the body of the mother, especially in her legs, hands and face. A few others avoided them because they are supposed to lead to jaundice (*kamani*).

Some women classified brinjal together with cold *rotti* and fresh coconut and banana as hard food: hard to digest. Only soft food should be consumed in this period after delivery. This classification of food by hard and soft is related to the medical system Ayurveda.

If we look at the quantity of food intake in this period, the data indicate that average energy intake in the first two months amounts to 1,658 kcal. a level slightly higher than the average in the last month of pregnancy which was 1,621 kcal. In the following months after delivery, energy intake slowly increases to return to a normal level.

### *The concept of hasi may*

After delivery, women are said to be in *hasi may*, literally a fresh, raw or tender body. The concept is not only used for women who have delivered but also for girls who have reached maturity. In these two states there are many similarities in the kind of food to be eaten and care to be taken.



During *hasi may*, the body of the woman is vulnerable and easily affected not only by cold or wind but also by the evil eye (*kannu* or *driishti*) or evil spirits and ghosts (*bhuta*, *devva* or *gaali*). One of the respondents said that when she was in *hasi may* and went outside for a while, she was bothered by *devva*: a spirit of the ancestor. As a result, she became very weak. Although she went to the temple where a *mantra* was recited by the priest, her health did not improve for many months.

The body of a wet mother is supposed to be weak and vulnerable but above all cold. As T. says:

“all the heat has gone during delivery. I lost a lot of blood so there is no *kaavu* (heat) any more in the body. There is some tiredness.”

and

“cold is there now... everything heated is needed”.

Warmth and heat are essential in this period after delivery. In the last former section we saw that women consume more heating foods like wheat preparations, hot rice, and *rotti* and warm water. In addition, heat is created by seclusion in a special room or corner of the house separated from the rest of the house by curtains. Also the charcoal fire (*benki*) kept under the bed is heating. *Benki* is given twice a day in the first period after delivery and ideally lasts for three months. Moreover, heat is provided by hot water baths and massage with oil and turmeric (*aarsna*), neem and garlic. And warmth is preserved by the cap or scarf which women wear on their heads.

The respondents believe that during *hasi may* heat gives back the strength and energy which is lost during delivery. Heat is believed to freshen the blood and to create new blood. Moreover,

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warmth relieves the pain suffered at the time of delivery. Warmth, too, is believed to be good for the 'open stomach' and to tighten the stomach again. For this, women also 'bind the stomach' (*hotte kattu*): a cotton cloth is tied around the (under)belly

“to get the stomach down and to close the open stomach again”.

Women explained that due to pregnancy their belly had expanded and by binding the stomach it would return to its normal shape. In addition,

“the birth canal is open after delivery and should be closed again”.

The cotton cloth worn after delivery speeds up this process. Stomach binding is also believed to be good to get rid of the waste blood. The period women 'bind the stomach' varies: some wore the cotton cloth for five days only, others for two months.

Ideally, the period of *hasi may* after delivery lasts for three months and is concluded with a special *puja*. As the mother of one of the wet mothers said:

“after taking care of these things for three months, a woman will be strong enough to go to the fields again”.

In reality, the length of the period of seclusion and rest depends on several factors. First gravida women are commonly given time to recover and only return to their husband's place after five months. Economic circumstances often determine whether a woman can afford to stay idle for a period of three months. One of the very poor women in the sample was working in the kitchen, preparing food for her children, as soon as two days after delivery. Gouli women also resume work soon after delivery. The dai in the Gouli hamlet told us that most women resume work five days after delivery.



The length of *hasi may* also depends on season. In the summer, when there is more heat from the sun, the period of seclusion can be shorter. This idea was very nicely illustrated by one of the traditional birth attendants whom we told that women in Holland may leave the house a few days after delivery.

Dai: “how is that possible? ten days only? Then it must be much more warmer there?”

I : no, it is much more cold over there.

D : then how can ten days be enough? poor women!! (*paapa*)”.

Women who had a miscarriage or stillbirth are also considered to be in *hasi may* and receive the same care, although often for a shorter period. The concept of *hasi may* seems a nice way to protect the health of both mother and child after delivery. As one of the respondents told us:

“this kind of protection against cold, dirt and evil spirits (*devva*) is not present in the hospital and therefore we prefer women to deliver at home”.

Also, it is a perfect time for women to get some rest and refrain from work, especially if they stay at their parents' house. But there are also some disadvantages, as the case study of G. illustrates.

### CASE STUDY

After eight months of pregnancy, G. gave birth to a very small child. Soon after delivery, G. started to feel unwell: she turned yellow. She wanted to go to the hospital but her mother and other relatives believed she should not go because she was in *hasi may*. She was too vulnerable for all kinds of influences. She turned out to have jaundice and when her relatives finally agreed to bring her to the hospital it was too late: she died.

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In another case, a mother who gave birth to a very small and thin child was not allowed to leave the house and bring the child to the hospital because she was in *hasi may*.

## **Beliefs with regard to the child**

Beliefs about what to eat after delivery are either related to the health of the mother or to that of the child. The first type of food habits were discussed in the former section, here we focus on the child.

### *Beliefs about food intake*

During the first three days of life, the child does not receive breastmilk. Asked why they did not give breastmilk, the respondents often said:

“there just is no milk”.

The ‘yellow milk’, the colostrum, is not considered to be good milk and it is simply thrown away. Some women reasoned that this milk had been in the breasts for nine months and was spoiled. Others said colostrum is dirty and only clean milk should be given to the child.

During these first three days, the child is given sugar water and honey (*jenu tuppa*) on the lips. The Goulis give buffalo milk to the child during these first days. It is common practice to start breastfeeding after three days and women continue to breastfeed for years. Several foodstuffs are believed to influence the production of breastmilk. Food items which are believed to stimulate the production of breastmilk, are seeds of fenugreek (*menthe*) boiled in warm water with sugar, garlic and green vegetables. In addition, during *hasi may* water intake is restricted as too much water is believed to dilute breastmilk and to lead to cramps in the stomach of the child. Women indicated they drank about one third of the normal amount after delivery.



Fresh chillis lead, via the breastmilk, to dysentery for the child. The same effects are created by cold and hard food like cold *rotti*. Warmth, in addition to all its beneficial effects for the mother is also believed to increase breastmilk.

Another custom worth mentioning is that it is considered quite normal for a woman to breastfeed a child other than her own.

### CASE STUDY

Once we visited S., who lost her own child in the process of labour. Her co-sister, who had a small child, was working in the fields that day. S. who was resting after delivery, had stayed at home and gave breastmilk to the child.

Asked during pregnancy what they wanted to have a small or big child and what they could do to affect this, many women said that even if the child was small at the time of the delivery it would grow afterwards and catch up in growth. Besides breastmilk, other foods are given to make the child grow. Dried dates are mixed with some breastmilk and given to the child. Many women also gave *gutti batli* during the first months of life. Traditionally, *gutti batli* is a bottle (*batli*) with Ayurvedic medicine and drops of this medicine are mixed with breastmilk. Nowadays, however, several different bottles are sold as *gutti batli*: multivitamin drops for example. In addition, Gripe water is believed to be good for growth of the child.

Like the mother, a child is protected from too much wind and cold. The custom of avoidance of banana and fresh coconut observed during pregnancy is continued after delivery. Along with other *tampu* food such as buttermilk and curds, these food items are avoided (especially in the cold season) because they lead to too much *kapha*, inducing illnesses like colds, coughs, and pneumonia.

### *Beliefs about other behaviour*

Like their mothers, during the first months of life children are considered to be very vulnerable. All kind of influences, like wind and cold, the evil eye and evil spirits can affect health of the child in a negative way. The same ideas concerning heat and warmth needed for the wet mother in the period after delivery are applied to the child. In addition, children are protected from too much cold by wearing the very typical caps on their head.

Small children, too, are believed to be very vulnerable for influences from people or evil spirits. For example: it is not allowed to take a photograph of a small child because it may lead to *kannu* or *driishti*. *Kannu* literally means eye and here it is referred to as evil eye. In the case of the photograph, someone who sees the picture and who has bad intentions can do a lot of harm to the child. As a research assistant explained:

“all people who see the photo will say ‘it’s a beautiful child, it is beautiful’ and in that way the child will be badly affected”.

Another assistant explained *kannu* in the following way:

T : “if someone says “oh, your baby is good and healthy, your baby is very good” , then that is *kannu*, bad influence”.

The concept includes envy: other people feel jealous because the child is very beautiful. The child can be protected against evil eye by black kohl spots (*kadige*) on the face, especially on the cheeks, or by putting a black thread around the wrists (*nederu*). Children who are affected by *kannu* become weak or thin or cry a lot. If a child is affected, the evil eye can be taken away by a special ritual. A powder is made from salt and fresh red chillis. This mixture is held in the hand and after moving it three times from head



to legs of the child, it is thrown into the fire. Some ash (*vibuuti*) is put on the forehead of the child and the evil eye is supposed to have been removed.

Also evil spirits can affect health of the children. One of the children in the study population died one and a half months after delivery without showing any sign of illness. People concluded it must have been inflicted by *gaali*.

Another factor influencing the health of the child, is *mutt dosha*. As mentioned in the previous Chapter, children who are very weak at the time of delivery, are said to be affected by *muttu dosha* the touch of a menstruating woman during pregnancy. During childhood also, health of infants is threatened by the touch of menstruating women (and barren women as well). Children are protected against it by a copper ring in one ear which is placed by a traditional medical practitioner. The amulet (*taita*) with the dried piece of the umbilical cord, tied around the waist of the child also protects the child against *muttu dosha*.

We conclude this section with one more example of a totally different perception of the etiology of certain illnesses. In the biomedical view, birth weight is believed to be one of the important indicators of survival chances of the child. However, women in the study population use a totally different indicator, as the following case study illustrates.

### CASE STUDY

A Madiga woman told us that she had already lost two children. She commented that it was no surprise that one boy died, for at the time of delivery she saw his *sulli* and knew he would not live a long life. A *sulli* is formed by hair on the back, between the shoulder blades, where short and soft hair grows. Among small children, this spot is easily discerned. The shape of the *sulli* should be beautifully round and if not, it is believed that the child will not

live long. The respondent asked a neighbour to show us the beautiful *sulli* of her daughter: indeed we saw a very round spot on the back in which a tattoo *hanchi battu* was made.

## Summary

Over 80 per cent of our study population delivered at home, either at their parents' (*tavaru mane*) or their husband's house. Of these home deliveries, 65.0 per cent were conducted by a traditional birth attendant, the *dai* (*sulgitti*). A relatively high proportion of deliveries (30.3 per cent) was conducted by a family member, often the mother. Only a small number of the respondents received help from a village health worker (14.7 per cent).

In the period after delivery, women are in *hasi may*, which literally means tender body. Women with their new born babies are secluded from others in the house. They stay in a dark but above all warm place. Heat is considered to be essential in this period after delivery: it will give back strength to the mother. Heat is provided by the blankets surrounding the bed: they not only keep away cold but also wind and bad influences from either people or evil spirits. Moreover, heat is provided by the charcoal fire under the bed, by hot water baths and massages, by wearing a scarf and by eating heating food like wheat preparations, hot *rotti* and rice and warm water.

Ideally, the period of *hasi may* lasts for three months but in reality the period varies. Economic or family circumstances might shorten the period. Besides the beneficial aspects of the seclusion of women after delivery (they get rest and can refrain from work), disadvantages were also identified. If either the mother or child becomes ill, they are not allowed to leave the house and visit a hospital.



In the period of pregnancy, beliefs are predominantly focused on what kind of food should be avoided. Papaya should be avoided as it is supposed to induce an abortion. Banana and fresh coconut because they lead to illnesses for the child after delivery. Very few beliefs about food to be eaten extra were identified. In the period after delivery, however, beliefs also include food which should be added to the diet. This illustrates that, in general, much more extra care is given to the mother after delivery than during pregnancy itself.

## Chapter 9 Conclusion and discussion

In this concluding chapter, we answer the research questions as they were formulated in Chapter one.

### **Reduction of energy intake during pregnancy?**

In the feasibility study, conducted before the actual research started, women in the research area reported that they ate less at the end of pregnancy. However, even though they said they reduce their food intake, the question was whether they really did so. In the actual research project, therefore, first of all we studied whether the reported reduction in food intake during the last trimester of pregnancy could be confirmed with quantitative data on food intake. Moreover, we studied the extent of reduction of food intake and related background variables.

Data on food intake were gathered by survey. They indicate that the diet of women in the study population is deficient in several kind of nutrients. Most respondents did not even reach the recommended levels of energy, protein, iron, and calcium intake for non-pregnant women. Besides poor economic circumstances, another constraint on the food intake of women is the distribution of food within the family. Only after men and children have finished their meals, are women allowed to eat what is left over. In addition, most women (especially the younger ones) are dependent from others to bring food from the market place.

Based on a small group of respondents, we found a trend of declining energy intake over the whole period of pregnancy. In month three/four of pregnancy, the average daily energy intake amounted to 1,774 kcal. The biggest change took place between month five/six/seven and month eight/nine of pregnancy. In this period, daily energy intake declined from 1,749 kcal to 1,662 kcal.



In general, the limited number of observations (not only regarding food intake but also regarding the other variables) was one of the difficulties faced in the quantitative part of the research. Especially the custom for women to deliver in their parents' place, and thus leave their husband's place, interfered with our research. We knew from the literature that women expecting their first child leave their husband's house, and we expected to be able to follow this small group. In reality however, women even expecting the fourth and fifth child left for their parents' place. This meant that in addition to the eleven research villages, some eighty to ninety other villages within a distance of 30 kilometres from Dharwad town had to be visited.

The change in energy intake in the final months of pregnancy appeared to be related to neither economic nor ecological factors. Energy intake during pregnancy was reduced whatever the month or season. Women situated in the lower socio-economic class even appeared to increase energy intake at the end of pregnancy, while women in the higher classes reduced it.

The main determinants of the change in energy intake in the final months of pregnancy turned out to be prepregnancy weight-for-height status and length of last birth interval. With respect to the first variable: women who were better nourished were more likely to reduce daily energy intake than women who were underfed before pregnancy. Women in the undernourished group (BMI 18.4) hardly changed daily energy intake and remained at a level of around 1,660 kcal. The well-nourished women (BMI 18.5), however, showed a decline in daily energy intake from a level of more than 1,800 kcal in month five/six/seven to 1,630 kcal in month eight/nine: an average reduction of 170 kcal. The average daily energy intake in the last two months of pregnancy thus hardly differed between the two groups of CED.

## Effects of a reduction of energy intake

The second research question focused on the effects of a reduction of food intake during the last trimester of pregnancy, among women whose nutritional status is already poor before conception, on the health condition of women and pregnancy outcome.

Studies indicate that, in general, such a reduction in energy intake will affect the nutritional status of women, while the birth weight of children is not affected. In the case of a deficient energy intake, maternal fat reserves (which are stored between the 10<sup>th</sup> and 30<sup>th</sup> week of pregnancy) are mobilized and the foetus grows at the expense of the mother. There seem to be a possibility, according to some studies, that there is a limit to maternal depletion too.

### Health condition of women

Among women in the study population, average weight gain over the whole period of pregnancy was 6.4 kg. The data in this study indicate that prepregnancy weight-for-height status is the main determinant of weight gain. Women with a lower BMI before pregnancy were likely to gain more weight during pregnancy than women with a higher BMI. Differentiating for two different CED groups, under-nourished women (BMI 18.4) gained on average 7.2 kg while well-nourished women (BMI 18.5) gained on average 5.2 kg.

In our study, it was possible that well-nourished women gained less weight because they were more likely to reduce energy intake at the end of pregnancy. However, no relationship was found between change in energy intake and total weight gain during pregnancy: under-nourished women who reduced energy intake appeared to gain most weight. Apparently, not the change in energy intake but health status before pregnancy influenced weight gain during pregnancy.



However, higher weight gain might be due to excess fluids and not to an increase in fat. Maybe under-nourished women are more likely to develop oedema (retention of fluids) during pregnancy? But, we were not able to gather information on overall prevalence of oedema.

The data show no relationship between change in energy intake and total weight gain during pregnancy. However, women who reduced energy intake by more than 300 kcal at the end of pregnancy gained significantly less weight in these last two months of pregnancy.

### **Pregnancy outcome**

The average birth weight for all live births was 2,646 grammes. About 26 per cent of the children were of Low Birth Weight. Premature children and first borns showed a significantly lower birth weight. Of all variables taken into account, total weight gain during pregnancy turned out to be the best predictor of birth weight.

In this study no relationship was found between either prepregnancy weight-for-height status or change in energy intake and birth weight of the child. The data suggest that children born to women who were under-nourished before pregnancy show an average birth weight which is not significantly different from the birth weight of children born to women who were well-nourished before pregnancy started.

This finding is not in accordance with other studies, which report a positive relationship between prepregnancy weight-for-height status and birth weight. The differences in results might be due to the limited number of observations.

## **Growth and development of the child in the first month of life**

We postulated that birth weight of children is not a sufficient indicator of well-being for newborns and decided to study growth and development of the children in the first month as well. We discovered data which indicate that growth velocity (grammes weight gain per kg body weight per day) of children in the first month of life amounts to 10.3. This figure is higher than growth velocity reported for children in industrialized countries and resembles that for children in Tanzania and Nigeria.

## **Reasons behind the custom of reduction of food intake**

Our study also focused on the reasons behind the custom of reduction in food intake in the last trimester of pregnancy, as perceived by women themselves. Based on other studies, we expected the reasons behind the custom of reduction of food intake to be predominantly culturally and socially determined. Physiological factors were expected to play a minor role. However, during the implementation phase of the research project it became more and more clear that physiological factors might play a role as well (see later).

With respect to the cultural factor determining food intake during pregnancy, we expected the custom of reduction of food intake during the last trimester of pregnancy to be determined by beliefs about what to eat related to cultural perceptions of the body. In addition, these beliefs were expected to be related to beliefs regarding other proper behaviour during pregnancy, and to be generated from the medical system Ayurveda.

Regarding the social factor, we expected women to be influenced in their beliefs about quantity of food intake during pregnancy:



- by female members of the family-in-law, especially the mother-in-law, and
- to a lesser extent by female neighbours, and
- by the own mother and female members of the own family as well.

Asked how much they ate during pregnancy compared with their normal food intake, most women (54.4 per cent) mentioned that they ate the normal amount during the first months of pregnancy and less than normal in the last trimester. Over 30.0 per cent claimed that they ate normally during the whole pregnancy. Another 12.0 per cent stated they ate less during the first months and afterwards just normally. Only seven women claimed to have eaten more during pregnancy.

The women who claimed to eat less indicated how their food intake changed. Some reported a slow decline in intake over the whole pregnancy, while others mentioned a reduction after month six. Others only ate less during the last month. Also, women indicated which changes took place: they either ate less *rotti* or took two meals instead of the usual three.

It is evident that most of the women claim not to eat more than normal. The main reasons not to eat more were related to health of the pregnant women themselves, not to the child. Women felt they could not eat more: if they do so, they themselves will have problems (*namge tras agati*).

The following problems would occur: *ekase* (breathlessness, not able to work, acidity), *ayasa* (feeling bored, tired) and not being able to work and walk freely. Several women said there just was no digestion (*khapsu*) to eat more or that acidity prevented them from eating more. Other women stated that because the child is there and occupies space in the stomach, no more food could be consumed.

The reason mentioned in the literature, i.e. the preference for a small child, was not reported by the respondents in this study. None of the women mentioned this as the reason for not eating more during pregnancy. Actually, the perceived relationship was reversed: **because** the child is big at the end of pregnancy and occupies more room, women start to eat less. If they eat more, there would be less room left in the stomach for the child, and it would be thin and less developed. On the other hand, if women eat less, there is more room in the stomach for the child and the child is able to move and to develop better. Movement of the child is not only considered to be beneficial for the child, the women themselves also feel better if the child moves. The belief that women eat less because the child occupies more space in the stomach is related to the prevalent idea that one eats until the stomach is full.

However, this perceived consequence, i.e. the child is able to grow better, is not a reason to eat less. The main reason for eating less is related to the health of the women themselves. The beneficial consequences for the child are a coincidence rather than a deliberately pursued goal.

One study conducted in South India stated that women reduced their food intake because they wanted to have a big child. However, this is not in accordance with our study: women did not eat less **because** they wanted to have a big child. They ate less because they wanted to feel well themselves. Therefore, we would like to add that the commonly given explanation for the custom of reduction of food intake during the last trimester of pregnancy not only tends to underestimate pregnant women's concern for the health of their babies, but moreover tends to underestimate the pregnant women's concern for their own health.

This brings us back to our research question. We expected that a reduction of food intake would be related to beliefs about eating which in turn would be related to cultural notions about the



body. Now, we wonder whether the reasons mentioned for a reduction in food intake during the last trimester of pregnancy indeed consist of beliefs which are culturally determined, or whether physiological factors play a role.

If physiological factors do play a role, would not also women in industrialized countries face the same physical problems at the end of pregnancy? None of the scientific reviews mention physiological changes during pregnancy which influence energy intake. However, verbal statements of medical professionals and pregnant women in the Netherlands suggest that similar feelings of unwell-being play a role. At the end of pregnancy the fetus presses against the stomach leaving women with less appetite and more acidity. It would be interesting to study beliefs regarding quantity of food intake during pregnancy among women in the Netherlands as well and compare them with the findings of this study.

Another consideration might be that women in industrialized countries, if they face these kinds of physical problems at the end of pregnancy, are more able to vary the quality of their diet. Women in our study population have little possibilities for variation: they consume the same bulky food every day. It would certainly make a difference whether one can consume, for example, only a little more cream (and reach a certain amount of extra kcal) instead of one more *rotti*.

As for the social factor related to beliefs regarding quantity of food intake, i.e. the influence of important others, it is evident that almost none of the respondents were told by either their mother-in-law or anyone else to eat less food during pregnancy. It was the respondent's own decision to change energy intake at the end of pregnancy. This is in contrast with what we expected.

Let us compare these beliefs about the quantity of food intake during pregnancy with those about the quality of food intake. Beliefs about what to eat mainly refer to be avoided during pregnancy. These beliefs are related to classifications of food as formulated in the medical system of Ayurveda. Papaya should be avoided during pregnancy because its heating qualities are supposed to induce an abortion. Other matters which are believed to create heat, like the hot sun, sexual intercourse, allopathic medicines, and working hard should be avoided.

Apart from a spontaneous abortion, food intake during pregnancy is believed to influence the body constitution of the child. Pregnant women should avoid banana, fresh coconut, and sesame. Consumption of these cooling and oily foods would lead to too much *kapha* in the child's body and cause illnesses like colds, coughs, and pneumonia after delivery. The quality of food intake during pregnancy is thus believed to affect the body constitution of the child. Other behaviour during pregnancy can also influence the health status of the child after delivery. The touch of a menstruating woman during pregnancy, for example, negatively affects health status of the child: it will be small and weak after delivery.

The social factor plays an important role regarding quality in food intake during pregnancy. Especially lower parity women appeared to be influenced by their mother-in-law and their own mother as well.

Summarizing, we can conclude that beliefs about the quality of food intake during pregnancy are related to cultural notions about the body, which in turn are related to beliefs regarding other proper behaviour during pregnancy. They are generated from the body of knowledge of which the medical system Ayurveda is most important. Moreover, beliefs of important others are important.



Regarding the quantity of food intake, however, beliefs are related only to cultural notions about the body. The influence of important others can be neglected: women themselves decide not to eat more at the end of pregnancy. It remains uncertain whether purely physiological factors play a role: would not also women in industrialized countries face the same physical problems?

Given the information above, what are possible points of impacts for health education?

If one aims at improvement of the **quality** of food intake during pregnancy it is evident that food classifications and cultural notions about the body as generated by the medical system of Ayurveda should be taken into account. From this study, we know that heating food and food which increases *kapha* in the body of the child should not be recommended. Apart from pregnant women themselves, health education should be aimed at important others like mothers-in-law and mothers.

Regarding the **quantity** of food intake however it does not make sense to aim at beliefs of respondents and important others. Health education could aim at food intake itself and recommend consumption of light foods. As we saw earlier, one of the respondents mentioned that she consumed a gruel (*ganji*) of barley rice during pregnancy: it was easy to digest and light for the stomach. When she ate it, she had no heavy stomach and could do the work she had to do.

Here, we come back to the resolution on maternal and child health adopted by the WHO, emphasizing the

“elimination of harmful traditional practices and other social and behavioral obstacles affecting the health of women, children and adolescents”.

It decries the persistence of practices

“such as child marriages, dietary limitations during pregnancy and female genital mutilation” (ESCAP, 1993).

Are the beliefs regarding quality and quantity of food intake during pregnancy indeed harmful to either mother or child?

Regarding the quantity of food intake, our study indicates that especially women who are well-nourished before pregnancy are more likely to reduce energy intake. They show a higher level of energy intake at the beginning of pregnancy and reach the same level of energy intake in the last two months of pregnancy on which under-nourished women already existed. This is one of the most important findings of the study, suggesting that the most vulnerable women, i.e. those who are under-nourished before pregnancy, are not likely to lower their energy intake during the last trimester of pregnancy. As became clear, women in the severe CED group even increased energy intake.

The health condition of women seems to be partly affected by a reduction in energy intake: women who reduced their energy intake by more than 300 kcal gained significantly less weight in the last two months of pregnancy. However, total weight gain during pregnancy was not affected. In addition, data in this study indicate that birth weight of children born to women who reduce energy intake does not significantly differ from that of children born to women who do not reduce energy intake.

Regarding the quality of food intake during pregnancy we can conclude that the food avoided are not important food items, and the avoidances do not seem really harmful to either mother or child. However, although the changes taking place during pregnancy might not be harmful, the absolute level of energy intake of women is of course too low, and their diet lacks all kinds of other nutrients, also when they are not pregnant.



## APPENDIX A

### CASE STUDY 1

Demographic data:	23 years old, parity 2
Caste:	Maratha Kulwadi
Income:	Primary source of income: agriculture; 7 acres cultivated Yearly income: 12,000 rs;
Family:	Joint family, composite household;
Activity:	Housekeeping only
Month of interview:	January

Hour (o'clock)	
5:30	Wakes up and washes her face
5:40	Making tea
6:00	Drinking tea
6:20	Prepare for cooking breakfast ( <i>uppittu</i> )
6:30	Washing the cooking pots
6:45	Preparing rice
7:00	Washing face of children
7:20	Giving tea to her husband's brothers
7:30	Giving tea and tiffin
8:00	Cleaning utensils used for tea
8:30	Making <i>rotti</i>
8:50	Giving the meal to her husband
9:00	Giving the meal to her husband's brothers
9:30	Bringing water from the borewell
10:00	Eating her own meal
10:20	Cleaning the house

10:30	Bathing the children
10:45	Some rest
11:00	Going to the tank to wash the clothes
12:30	Returning home
12:45	Putting clothes outside, to dry
13:00	Some rest
13:20	Giving meal to sons
13:30	Giving meal to husband and husband's brothers
14:00	Taking her own afternoon meal
14:30	Sleeping
15:30	Cleaning rice
15:50	Visiting flour mill, to grind the rice
16:10	Returns home with the rice
16:30	Cleaning rice
17:00	Cleaning the house
17:30	Chatting with husband
17:40	Bringing water from borewell
18:20	Bringing fuelwood from backside of the house to kitchen
18:40	Cleaning the kitchen
19:10	Preparation for the meal
19:30	Preparing tea
19:45	Giving tea to all family members
20:00	Preparing rice
20:10	Giving meal to children
20:30	Making <i>rotti</i>
20:45	Making vegetable <i>bhaji</i> (curry)
21:10	Giving meal to husband and all other family members
21:40	Eating herself
21:50	Rest
22:20	Playing with son and sleeping



## CASE STUDY 2

Demographic data:	21 years old, parity 2
Caste:	Korama
Income:	Primary source of income: agriculture 2 acres cultivated Yearly income: 5,000 rs
Family:	Joint family
Activity:	Housekeeping and mat and brooms making
Month of interview:	December

### Hour (o'clock)

6:30	Wakes up, starting the day
6:40	Washing the face
6:50	Cleaning the house
7:00	Making tea
7:15	Washing faces of children
7:30	Drinks tea with children
7:50	Giving tea to husband
8:00	Cleaning the house
8:30	Cooking rice
8:45	Making <i>rotti</i>
9:00	Meals are prepared
9:20	Taking bath
9:40	Taking some rest
10:00	Giving meal to husband
10:20	Giving meal to children
10:45	Eats meal herself
11:00	Cleaning all utensils used
11:30	Enjoy with neighbours Starting mat weaving work in her house
13:00	Completes one mat
13:30	Starting making of brooms

14:00	Eating meal
14:30	Some rest
15:30	Continues making brooms
16:30	Completes 5 brooms Starts mat weaving
17:00	Stops weaving
17:30	Social talk with neighbours
17:45	Bringing water from borewell
18:15	Making tea
18:30	Bringing fuelwood
19:45	Drinking tea with husband and children
19:20	Preparation for cooking
19:40	Making rice
20:00	Making <i>rotti</i>
20:15	Making vegetables ( <i>bhaji</i> )
20:30	Cleaning house
21:00	Eating night meal with husband and children
21:30	Leisure time with husband
22:00	Sleeping

### *CASE STUDY 3*

Demographic data:	19 years old, parity 2
Caste:	Lingayat
Income:	Primary source of income: agriculture 8 acres cultivated (all irrigated) Yearly income: 5,000 rs
Family:	Nuclear family
Activity:	Housekeeping and fieldwork
Month of interview:	November



Hour (o'clock)	
6:00	Waking up, washing the face
6:30	Cleaning the kitchen
6:45	Making tea
6:50	Drinking tea with husband
7:00	Cleaning the cattle shed
7:15	Giving tea to children
7:30	Cleaning kitchen utensils used for tea
7:45	Bathing the children
8:00	Making rice
8:15	Making <i>rotti</i> and vegetables ( <i>bhaji</i> )
8:45	Milking the buffaloes
9:00	Giving meal to husband
9:20	Giving meal to children
9:40	Eating meal herself
10:00	Going to their own fields
10:20	Harvesting the jowar grains and beans
11:30	Some rest
11:45	Continues the work
12:30	Bringing water from the irrigation canal
13:00	Continue work with husband
14:00	Using meals with husband, in the fields
15:00	Resting (sleeping under the tree)
15:30	Continues the work
16:30	Returns home
16:45	Cleaning the whole house
17:00	Bringing water from borewell
17:20	Bringing fuelwood from backside of the house

:

17:30	Starting to prepare the meal
18:00	Making tea
18:20	Drinking tea with husband and children
18:40	Enjoying with neighbours
19:00	Preparing rice
19:25	Making <i>rotti</i>
19:45	Preparing vegetable <i>bhaji</i>
20:00	Giving meals to children
20:30	Giving meals to husband
21:00	Eating meal herself
21:30	Cleaning materials
22:00	Playing with daughter
22:10	Preparing the beds
22:30	Sleeping

#### CASE STUDY 4

Demographic data:	22 years old, parity 3
Caste:	Badiger
Income:	Primary source of income: carpentry; secondary: coolie; 2 acres of land are leased out; Yearly income: 1,000 rs
Family:	Nuclear family, composite household
Activity:	Housekeeping and wage labour in the stone quarry
Month of interview:	September
Hour (o'clock)	
6:00	Wakes up Makes some <i>rangoli</i> designs in front of her house
7:00	Making tea and drinking it. Starts to prepare the rice, thurdal ( <i>toogare beelee</i> ) and <i>rotti</i>



8:30	Preparation of food completed
8:45	Eating some <i>rotti</i> and cleaning the house
	Lunch is packed
9:15	Leaving for work, walking half an hour to the stone quarry
10:00	Starting the work: taking stones from the quarry and putting them in a basket and handing them over to the younger girls who transport the stones on their heads to the crushing machine
11:30	Drinking some water and taking some rest
12:00	Starting work again
13:00	Having lunch: <i>rotti</i> , rice and <i>togaare beelee</i> brought from home. Taking rest
14:15	Starting work again
18:00	Work is finished, walking again for half an hour home
19:00	At home, starting to clean, starting the fire in order to make tea. Drinking tea
	Cooking rice, <i>toogare beelee</i> , and some curry ( <i>saru</i> )
21:00	Having meals all together
21:30	Preparing bed: spreading mattresses out
22:00	Sleeping

## APPENDIX B

### Kannāda words and concepts

<i>Aarsna</i>	Turmeric ( <i>curcuma domestica</i> )
<i>Aarti</i>	Oil lamps which are lighted and used in <i>puja</i>
<i>Adike</i>	Areca-nut
<i>Agni</i>	Literally: fire. Here in the medical system Ayurveda: the all-digesting fire in the human body
<i>Ayasa</i>	Feeling tired, bored
<i>Aidesi</i>	Literally: the fifth day. On the fifth day after delivery a ceremony is performed which marks the end of the pollution period
<i>Alvi ganji</i>	Gruel made of alvi
<i>Amawasya</i>	New moon
<i>Anganwadi</i>	Kindergarten, part of Integrated Child Development Service (ICDS) aiming at nutritional care and health education of pre-school children and pregnant and lactating women
<i>Antu</i>	Gum
<i>Arama</i>	Good, well
<i>Ashakti</i>	Lack of body strength
<i>Atte</i>	Mother-in-law
<i>Avalakki</i>	Beaten rice used to prepare a snack with oil, green chillies, salt and spices
<i>Baike</i>	Special likings



*Baale hannu*

*Baavu*

*Bade soppu*

*Barsna*

*Beevu*

*Beevin rasa*

*Benki*

*Bhaji*

*Bhajji beeru*

*Bhuta*

*Butti*

*Burkha*

*Charma (hunnu)*

*Chapati*

*Chello*

Banana

Swelling on hands, feet or face.

Oedema

Aniseed

An allergy, an adverse reaction of the body. Some food items are considered to be *barsna* during a special period, like pregnancy and lactation or an illness

Neem

Potion made of neem leaves and water. It is intended for women who have had many stillbirths and children with malformations, both related to a heating body constitution. *Beevin rasa* is considered to be cooling (*tampu*)

Fire of charcoal put under the bed of the wet mother and her child

Curry made of vegetables or pulses

Dried piece of root, tied around the wrist of both mother and child after delivery (commonly on the fifth day)

Evil spirit, malignant spirit or ghost. See also *devva* and *gaali*

Basket

The black dress worn by Muslim women when they go out

Skin rashes, pimples

Kind of pancake, used as staple food, made of wheat flour and oil

Good



<i>Churidar</i>	Also <i>salwar kameez</i> : dress worn by females and consisting of pants and shirt and shawl
<i>Churmari</i>	Puffed rice of which a snack is prepared with oil, green chillies, salt and spices
<i>Dappa</i>	Big or fat
<i>Devva</i>	Ghost, evil spirit; see also <i>bhuta</i> and <i>gaali</i>
<i>Dhobi</i>	Washerman
<i>Dodakke</i>	Literally: being big. Here: reaching maturity, menarche
<i>Draxi</i>	Grapes
<i>Ekase</i>	Symptoms occurring after eating too much: the stomach is full and problems like breathlessness, pain on the chest, dullness, tiredness, acidity occur
<i>Gaali</i>	Literally: wind. But here: evil spirit, malignant spirit. See also <i>bhuta</i> or <i>devva</i>
<i>Gadige</i>	Earthen pot. Here: used to bury the placenta
<i>Gadjiga</i>	Fruit grown in the forest and used to wean a child
<i>Ganji</i>	Gruel
<i>Garbha kosha</i>	Uterus in Sanskrit. See also <i>kusin chilla</i>
<i>Gensu</i>	Sweet potato
<i>Ginna</i>	Sweet prepared from colostrum of the cow or buffalo. Considered to be special and to be shared with others
<i>Grahana</i>	Eclipse, either of the moon or sun



*Gutti batli*

*Hanchi battu*

*Hadadale*

*Hasi cobri*

*Hasi may*

*Hasi mensinkai*

*Hechchige*

*Herige*

*Hesaru beele*

*Horsu*

*Hotte*

*Hotte andu*

Traditionally Ayurvedic medicine. The drops are supposed to be good for young children

Tattoo spot, commonly on the forehead of girls

She has delivered

Fresh coconut

Status of women after delivery, literally meaning fresh or tender body. Women are isolated, staying in a special room or separated from others in the house by curtains around the bed. Ideally, this period of seclusion lasts for three months

Fresh green chillies

More

Delivery

Green gram

A bed made from wood and thread. Especially made for wet mothers

Stomach

or: *hotte hindu*, *hotte badiyudu*.  
Illness of the child (after delivery) associated with eating banana and fresh coconut during pregnancy. These food items are believed to lead to too much *kapha* in the body of the child and to illnesses like cough, cold, *pakkadi* and *hotte andu*.  
Translated as pneumonia.

Also mentioned in the villages:  
*hottin bene* and *hotte rooka*

*(Avalu) hottilli adaale*

*Hotte hoitu*

*Hotte kattu*

*Hotte mugitu*

*Hulsudu*

*Hunnu*

*Hokkala*

*Iddali*

*Jenu tuppa*

*Jiirge*

*Joola*

*Jvara*

*Joolige*

*Kadige*

*Kaavu*

*Kachcha*

*Kadime*

*Kai*

*Kamani*

*Kanya*

*Kannu*

*Kapha*

*Kekkare hannu*

*Kemmu*

Woman who is pregnant.  
Literally: she is with a stomach  
Spontaneous abortion. Literally:  
the stomach has died

Custom of binding the stomach  
after delivery

Spontaneous abortion. Literally:  
the stomach has stopped

Acidity. Also: *hulli*

Kind of blister on the back of the  
child. Spina bifida

Umbilical cord

Charcoal

Honey

Cummin

Jowar: sorghum vulgaris

Heat in the body

Small hammock attached to the  
*horsu* in which the child sleeps in  
the first period after delivery

Black kohl spots, especially put  
on the cheeks to protect the child  
from *kannu*

Heating. In Hindi: *ushna*

A *kachcha* road is a mud road

Less

Raw / unripe fruit

Jaundice

Astrological sign: Virgo

Literally: eye. Here: evil eye.

Also *driishti*

One of the *tridosha*

Kind of melon

Cough



<i>Kempu gulge</i>	Literally: red tablets, i.e. the iron tablets
<i>Khapsu</i>	Capacity or digestion
<i>Khapsu dilla</i>	No capacity, no digestion
<i>Khara</i>	Chilli
<i>Khar pudi</i>	Chilli powder
<i>Kirani</i>	Grocery shop
<i>Kobri kara</i>	Special dish consumed after delivery, made of dried coconut with sugar or jaggery. According to socio-economic status of the household dried dates, cloves or gum are added
<i>Kubasa</i>	Literally: blousepiece. Ceremony performed during the first pregnancy
<i>Kudugolu</i>	Sickle, used for cutting the paddy. Also used for cutting the umbilical cord
<i>Kumble kai</i>	Pumpkin
<i>Kusu</i>	Baby
<i>Kusin chilla</i>	Literally: bag of the child. Uterus
<i>Kutumba</i>	Family
<i>Ladu</i>	Sweet made especially for women who have delivered. Prepared from heating food like wheat and sugar or jaggery, nuts, dried dates, gum
<i>Lingam</i>	Symbol of Shiva
<i>Maidan</i>	Plateau landscape: a huge plain with some isolated hills. Receives a lower amount of rain per year and is extensively cultivated with crops which differ from those

*Mailige*

*Majjige*

*Mala*

*Malnad*

*Mane*

*Mangala sutra*

*Mannu*

*Mantra*

*Masa*

*Matha*

*Matti*

*Mavinkai*

*Mavinhanu*

*Mensin bakki*

*Mensin kai*

*Menthe palee*

*Mosaru*

*Mosambi*

*Mullah*

*Muttu dosha*

grown in the other region, the  
*malnad*

Pollution

Buttermilk

In the medical system Ayurveda:  
residual products of the human  
body like urine, faeces and sweat

A rugged landscape with a  
number of hills at higher  
elevation, being more forested  
and receiving a moderate to  
heavy rainfall per year (see also  
*maidan*)

Sitting plank

The necklace made of black  
beads and a golden pendant,  
marking the marital status of a  
woman. Also: *tali*

Mud

Religious verse

Placenta

Temple

Chalk

Unripe mango

Ripe mango

Prickly heat

Green chillis

Green vegetable: fenugreek

Curds

Sweet lime

Muslim priest

Children are said to be affected  
by *muttu dosha*, leading to illness  
and weakness, if they are touched  
by a menstruating woman



<i>Nakshatra</i>	Every Hindu month is divided in Nakshatras, a period of fifteen days
<i>Nederu</i>	Black thread put around wrist of child to protect from <i>kannu</i>
<i>Oni</i>	Street
<i>Oota</i>	Meal
<i>Paapa</i>	Poor ... in the sence of 'poor you'
<i>Pachana</i>	Digestion
<i>Payasa</i>	Sweet prepared from wheat and sugar
<i>Pakkadi</i>	Ribs, but here associated with the disease <i>hotte andu</i> : the stomach below the ribs goes up and down
<i>Pan</i>	Betel-leaf with areca-nut and lime. Sometimes also tobacco is added. Consumed after the meals and said to be good for digestion. In the towns, sweets, honey and special spices are added
<i>Panchanga</i>	The astrological year book released at Ugadi (Hindu new year), valid for the coming year for a certain region
<i>Panchayat</i>	Traditionally the village council. Nowadays an administrative unit
<i>Patti</i>	Rope used during delivery and bound around the stomach of the woman to prevent the child goin up
<i>Pitta</i>	One of the <i>tridosha</i>
<i>Pucca</i>	A <i>pucca</i> road is a paved road
<i>Pushti</i>	Fat
<i>Puja</i>	Worship

*Rangoli*

Designs of chalk made in front of the house

*Rava*

Wheat

*Rava ganji*

Gruel made of *rava* (wheat coarse)

*Rotti*

Kind of pancake, used as staple food, made of jowar and water

(*Sajjaka*

Sweet made of wheat and jaggery

*Sanna*

Small

*Saru*

Sauce

*Sautekai*

Cucumber

*Seebu hannu*

Apple

*Shawige*

Dish made of a kind of vermicelli (wheat) with milk and sugar

*Shakti*

Body strength

*Shenga*

Peanut

*Shetigevanna vaara*

Literally: the day of Shetigaava. On a special night in the period after delivery (often the fifth day) the corridor in the house is kept free for the arrival of the Goddess Shetigaava. When she arrives, she writes the fate of the child on its forehead

*Shira*

Sweet prepared from wheat and sugar

*Sooder maava*

Maternal uncle

*Sooder maava maga*

Cross-cousin along mother's side

*Sooder atte maga*

Cross-cousin along father's side

*Soobhana*

Songs sung for women during each 'rite de passage': maturity, marriage and first pregnancy

*Sooji*

*Rava*



<i>Sulli</i>	Composition of the hair on the back, seen as a sign of whether a child is healthy and will live a long life
<i>Sulgitti</i>	Traditional birth attendant: dai
<i>Sunna</i>	Lime, used with betel-leaf and areca-nut. Also used against acidity
<i>Suttu</i>	A burn
<i>Suttid kale</i>	A mark of a burn, i.e. a birth mark
<i>Swami(ji)</i>	Priest
<i>Taita</i>	Amulet
<i>Taluk</i>	Administrative unit: every district is divided in <i>taluks</i>
<i>Tampu</i>	Cooling
<i>Tavaru mane</i>	Mother's or own parents' place
<i>Thoda</i>	Waterpot
<i>Tiffin</i>	Snack
<i>Toogare beelee</i>	Thurdal
<i>Tonic gulge</i>	Literally: tonic tablets, i.e. iron tablets
<i>Tottla</i>	Cradle
<i>Tridosha</i>	The three body humours <i>vata</i> , <i>pitta</i> and <i>kapha</i> which, if a person is healthy, are in equilibrium
<i>Ushna</i>	Heating (Hindi) = <i>kaavu</i> in Kannada
<i>Uppittu</i>	Tiffin, snack made from <i>rava</i> with green chillies, salt and other spices. Also: <i>upma</i>
<i>Uppinkai</i>	Pickles made of mango, consumed with the meals

<i>Vata</i>	One of the <i>tridosha</i> . Also: <i>vayu</i>
<i>Vibuthi</i>	Sacred ash
<i>Wana cobri</i>	Dried coconut
<i>Yeele</i>	Betel-nut leaf, used with areca-nut and lime for a <i>pan</i> after finishing meals
<i>Yellu</i>	Sesame. <i>Bili yellu</i> : white sesame

## APPENDIX C

### A few references<sup>1</sup>

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In this book, for the sake of readability, most references as they are mentioned in the dissertation, has been left out. For readers with a deeper interest in the study, we request them kindly to refer to the dissertation itself.





On the 1st of June 1864, I received  
from the Secretary of the  
Board of Education, a copy of  
the report of the Committee on  
the State of the Schools, for the  
year ending 31st March 1864.

REPORT

OF THE

BOARD OF EDUCATION

FOR THE YEAR ENDING 31st MARCH 1864.

LONDON: PRINTED BY

WILLIAM CLAYTON,

PRINTING OFFICE, 15, N. B. STREET, LONDON.

1864.

THE REPORT OF THE

COMMISSIONERS OF THE

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PRINTING OFFICE, 15, N. B. STREET, LONDON.

1864.







The present book is a reworked, popular version of the author's dissertation "Being pregnant in rural South India" and presents the results of two years field work in 14 villages in North Karnataka. The dissertation has been reviewed as a

"carefully documented research on a subject of great global importance" -

*F. Shroff (Canada) in Social Science and Medicine*  
and

"..... a model for micro and anthropological demographic studies ....."

*- Pat Caldwell (Australia) in Health Transition Review*



Dr. Inge Hutter (1959) graduated in non-western demography and cultural anthropology specializing in medical anthropology. She conducted field work in Cameroon (Africa) and India. At present she is a research fellow of the Royal Dutch Academy of Arts & Sciences at the Population Research Centre, University of Groningen, The Netherlands. Among others, she is involved in a research project on reproductive health and child spacing which is conducted in the same villages in North Karnataka.